

**DEVELOPMENT OF A SAFE CONCEPTION TRAINING PROGRAMME
FOR HEALTHCARE WORKERS IN ANTIRETROVIRAL THERAPY
UNITS IN THE VOLTA REGION, GHANA**

A Thesis Submitted to the Faculty of Community and Health Sciences, University
of the Western Cape, in Fulfilment of the Requirements for the Degree of Doctor

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by

Ellen Eyi Klutsey
(Student Number: 3623401)

Supervisor: Professor Deliwe R. Phetlhu

Co-Supervisor: Professor Regis R. Marie Modeste

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ABSTRACT

Women living with HIV (WLHIV) desire to bear children. Safe conception (SC) education for informed decision-making to prevent peri-conception HIV infection is needed but not routinely available. Poor SC knowledge, attitude, skills in addition to the absence of a standardised training programme were challenges that limited delivery. This study therefore aimed at developing a training programme for healthcare workers to facilitate SC education among WLHIV. The study adopted the intervention research approach. Both qualitative and quantitative methods were employed.

The intervention mapping model was adopted as the overarching framework. Four of its six steps were followed in developing the safe conception training programme (SCTP). In the first step, nurses and midwives' knowledge, attitude, self-efficacy for SC and interest for its education were assessed. They had poor knowledge and attitude amid moderate self-efficacy and interest which confirmed the aforementioned challenges identified in the literature. Findings from a nominal group discussion with HIV care experts as well as exploration of the SC needs of 24 WLHIV through interviews also suggested these challenges. Triangulating these findings, themes for the SCTP structure were deduced and fed into the subsequent stages of the development. Programme and performance objectives were formulated from the themes (step two). In a day's workshop, the SCTP structure was designed which was then completed by the researcher.

The SCTP was piloted for evaluation through a two-day workshop for feasibility, acceptability, effectiveness, strengths and weaknesses. Both quantitative and qualitative methods were used in the evaluation which was based on the context, input, process and product (CIPP) model. Twenty

HCWs, two trainers and an observer were the evaluators in addition to 23 WLHIV who had had SC education a week after the workshop. They were all purposively sampled. The SCTP was found acceptable, feasible and effective. It increased the knowledge, attitude and self-efficacy of the HCWs. The HCWs and WLHIV found the programme useful and recommended it for other categories of users. However, the programme was found too loaded for a two-day training – its main weakness. It was revised for a three-day training.

Despite its usefulness, the SCTP was pretested on relatively small and purposively sampled users limiting its generalizability. There is a need for a more robust study in other settings to confirm these findings.



Key words – healthcare workers; HIV prevention; SC training programme; Volta Region; women living with HIV

DECLARATION

I declare that *Development of a SC Training Programme for Healthcare Workers in Antiretroviral Therapy Units in the Volta Region, Ghana* is my work, undertaken under the supervision of **Professor Deliwe R. Phetlhu** and **Professor Regis R. Marie Modeste**. It has not been presented elsewhere for the award of a degree or certificate. All sources have been duly distinguished and appropriately acknowledged by complete references.



Ellen Eyi Klutsey

Date: August 16, 2021



DEDICATION

I dedicate this work to:

- my parents, the late Madam Abla Stella Nyagblordzro and Mr Cornelius A.K. Klutsey.
Thank you for instilling in me the virtues of discipline, diligence and value for education among others. I am eternally grateful.
- the memory of my beloved husband, Elorm Samuel Kweku Ackumey, who passed on suddenly during the final stages of this PhD journey. May your gentle soul enter the rest of Jehovah Adonai till we meet again.



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*I will extol You, my God, O King;
And I will bless Your name forever and ever.
Every day I will bless You,
And I will praise Your name forever and ever.
Great is the Lord and greatly to be praised;
And His greatness is unsearchable.
Psalm 145:1-3 (NKJ)*

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LIST OF ABBREVIATIONS

Acronyms

AIDS	Acquired immune deficiency syndrome
AMOS	Analysis of a Moment Structures
ART	Antiretroviral Therapy
ARVs	Antiretrovirals (Medication)
ASRM	American Society for Reproductive Medicine
CCR5	Chemokine Receptor 5
CD4	Cluster of Differentiation 4
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
DNA	Deoxyribonucleic Acid
EFA	Exploratory Factor Analysis
eMTCT	Elimination of Mother-to-child-transmission
FIs	Fusion Inhibitors
GHS	Ghana Health Service
GHSERC	Ghana Health Service Ethics Review Committee
HCT	HIV Counselling and Testing
HCW	Healthcare Worker(s)
HIV	Human Immunodeficiency Virus
MLHIV	Men Living with HIV
NAP+	Ghana Network Association of People Living with HIV

PLHVIV	People Living with HIV
PMTCT	Prevention of mother-to-child transmission
PrEP	Pre-Exposure Prophylaxis
RMSE	Root Mean Square Error
SC	Safe conception
SCE	Safe conception Education
SCTP	Safe conception Training Programme
SMS	Short Message Services
SPSS	Statistical Package for Social Sciences
SRMR	Standard Root Mean Residual
SSA	Sub-Saharan Africa
STIs	Sexually Transmitted Infections
VMMC	Voluntary Male Medical Circumcision
WLHIV	Women or Woman Living with HIV
WHO	World Health Organization



SECTION ONE: CONTEXTUALISING THE RESEARCH STUDY

This section is intended to orient the reader and provide the context within which the study was conceptualised, as well as the literature support to the study. The section makes a case for the development of the SC training programme (SCTP) for healthcare workers (HCWs). It features an overview of the need for the SCTP in the context of reproductive health HIV care to WLHIV in the Volta Region of Ghana. This is presented in two chapters, with chapter one presenting the orientation to the study, while chapter two presents the literature review.



CHAPTER ONE: ORIENTATION TO THE STUDY

1.1 INTRODUCTION

From the time of its first detection in the 1980s to date, the human immunodeficiency virus (HIV) infection remains a burden (WHO, 2020a:1; Piot et al., 2015:176). Though laudable advances have been made in HIV research which has transformed the once fatal disease into a chronic and manageable condition with reduced incidence and mortality, HIV continues to pose a threat to the very existence of individuals, families and communities (Piot et al., 2015:175). The virus infects people of all ages; from the developing foetus in utero to the aged (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2014:233).

Globally, HIV incidence is reducing gradually. However, regional and subregional disparities exist. While SSA, the Caribbean, Central Europe, North America, Asia and the Pacific had a decline in HIV incidence, eastern Europe and central Asia registered rising new infections (UNAIDS, 2020c:6). The estimates show that 38 million people were living with HIV at the end of 2019, out of which the adult population (15 years and above) was 36.2 million (UNAIDS, 2020c:28) The female adult population of people living with HIV (PLHIV) was estimated at 19.2 million while the males stood at 17 million in 2019, suggesting a disproportionate infection in women (UNAIDS, 2020c:28).

The disease burden differs in the different regions of the world. Sub-Saharan Africa (SSA) is the most burdened region. It contributed to over two-thirds of the world's HIV prevalence in 2019 (WHO, 2020a:1) and 61% of the 1.7 million new infections (UNAIDS, 2019b). In the region, the disproportionate HIV burden in women is higher. Women formed 56% of the population of people

living with HIV in 2017 with those of reproductive age being the majority sub-population (UNAIDS, 2018:5).

Though both HIV incidence and HIV-related deaths are declining generally, the rate differs among males and females in the SSA region. Comparatively, women have higher infection rates but lower death rates (UNAIDS, 2020c:8). This mismatch is one factor that influences the dynamics of the HIV epidemic in the region. Another important factor is the mode of transmission. In SSA, it is established that the principal mode of HIV transmission is via heterosexual sex with a concomitant epidemic in children (Kharsany and Karim, 2016:35) as most of the women living with HIV are of reproductive age (UNAIDS, 2020c:2) and are in stable relationships (WHO, 2012:7) that place premium on having biological children (Berhan and Berhan, 2013:8).

The rising prevalence of WLHIV in SSA is reported alongside fertility intentions and childbearing among WLHIV, which is their legal right (United Nations (UN), 1948). Literature shows that reproductive-aged women living with HIV (WLHIV) desire to have children (Berhan and Berhan, 2013:8; Ngure *et al.*, 2014:3; Wekesa and Coast, 2014:3; Black *et al.*, 2016:1586; Matthews *et al.*, 2017:3) and that some were pregnant or had had children after their diagnosis with HIV (Kastner *et al.*, 2014:3; Brubaker *et al.*, 2011:318). Though, the process of conception raises crucial issues on potential horizontal HIV infection/super-infection as well as vertical transmission (Brubaker *et al.*, 2011:318) WLHIV brave the risk in their quest to have their biological children.

Seroconversions have been reported (Brubaker *et al.*, 2011:318; Ngure *et al.*, 2016:1588) making reproductive-aged WLHIV a population of interest in HIV prevention efforts. This is even more obvious with the observation that this population has, as part of it, female sex workers (Schwartz

et al., 2014:3) - a key population known for HIV transmission in the region. Thus, reproductive-aged WLHIV who desire to have biological children project as a group of interest that needs to be targeted with SC strategies in the fight against new HIV infections.

It has been established that SC strategies reduce horizontal HIV infection risk that is inherent in pregnancy attempts of WLHIV (Matthews *et al.*, 2017:2). However, in SSA, this (peri-conception HIV prevention) area had received comparatively little attention amid the plethora of evidence that makes a case for SC as a harm reduction strategy in reducing horizontal infections (Semprini *et al.*, 1992:1317; Mandelbrot *et al.*, 1997:850; Bujan *et al.*, 2007:1912; Gilling-Smith *et al.*, 2006:871; Matthews *et al.*, 2017:2).

Safe conception strategies are evidence-based ART-driven precautions that help minimise HIV transmission risk while HIV-affected women and couples attempt pregnancy (Heffron *et al.*, 2015:5) In SSA, the practice of SC education to people living with HIV (PLWHIV) is observed to be low. It was recently documented in South Africa, (Schwartz *et al.*, 2017:49) Kenya (Mmeje *et al.*, 2016:1; Brown *et al.*, 2016:4) and Uganda (Mindry *et al.*, 2018:3). This observation concurs with Goggin and colleagues' (2014:991) assertion that there is a "glaring gap" in the current reproductive care being rendered to WLHIV in resource-constrained countries with regards to SC. Also reaffirming is the consensus statement that made a case for SC at the 2017 International AIDS Society (IAS 2017) conference in France (Matthews *et al.*, 2017:2). Several studies have indicated that SC strategies are not being routinised as part of reproductive health services in the HIV cascade of care. These studies cited poor attitude, inadequate knowledge and skill on SC strategies (Kawale *et al.*, 2014:4-5; Moodley *et al.*, 2014:4; Goggin *et al.*, 2014:1002; Laar, 2013:4; Matthews *et al.*, 2014:212; Matthews *et al.*, 2016:4-5) in addition to lack of training, training

programmes as well as guidelines (Matthews *et al.*, 2017:4) as the main challenges limiting the delivery of SC services.

One of the many strategies often implemented to beef up HCWs' performance is training programmes which are geared towards knowledge upgrade, skills development, modification of behaviour and improved competence in an identified area of healthcare (Richter, *et al.*, 2015:105; WHO, 2016c:41). Many agencies, both local and foreign, such as The United States President's Emergency Plan for AIDS Relief (PEPFAR) have sponsored the training of many health service providers over the years in the diverse aspects of HIV care (PEPFAR, 2021:5-6). Over the years, more than 290 000 health service providers in HIV care, including nurses and midwives, were trained specially in SSA. Areas of training included prevention of mother-to-child transmission (PMTCT), antiretroviral therapy (ART), voluntary medical male circumcision (VMMC) among others (PEPFAR, 2018:2; PEPFAR, 2021:5-6).

This notwithstanding, very few training programmes for healthcare workers in SC education have been reported. Brown *et al.*, (2016:4) reported on health service provider training and evaluation in Kenya with their novel SC toolkit. Improved provider confidence, knowledge and attitude for SC education were observed. Schwartz and colleagues also reported the development of SC services and education of persons living with HIV in South Africa (Schwartz *et al.*, 2017:49). Other areas of SC research bore on the perspectives, knowledge, attitude and practices of the health service providers (Laar, 2013b; Crankshaw *et al.*, 2014; Schwartz, Bassett, *et al.*, 2014; Finocchiaro-Kessler *et al.*, 2014; Goggin *et al.*, 2014; Kawale, Mindry, *et al.*, 2014; Matthews *et al.*, 2014, 2016; Moodley *et al.*, 2014; Breitnauer *et al.*, 2015; Saleem *et al.*, 2016; Mindry *et al.*, 2016; Ngure *et al.*, 2017).

A recent systematic review on SC availability, acceptability and education in SSA revealed that most of these studies were done in the east and southern African countries such as Kenya, South Africa, Tanzania, Uganda (Davey *et al.*, 2018:2) which are severely endemic regions for HIV (AVERT, 2019). Information is scanty on such studies in the West African countries; the studies found from this subregion were done in Nigeria (Iliyasu *et al.*, 2019a: 538; Iliyasu *et al.*, 2019b:483-484 Davey *et al.*, 2018:4; Ezeanochie *et al.*, 2009:98)

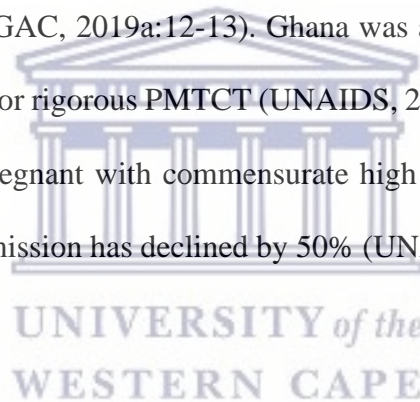
1.2 BACKGROUND OF THE STUDY (CONTEXTUALISING THE DEVELOPMENT OF A SC TRAINING PROGRAMME IN THE VOLTA REGION - GHANA)

Ghana, like many other West African countries, has an HIV epidemic that is described as mainly low-level and generalised (GAC, 2016:3, GAC, 2019a:1; GAC, 2019b:5) driven predominantly via heterosexual intercourse with concomitant vertical transmission (GAC, 2016:23). The disease affects women disproportionately. In 2016 the female to male ratio was 3:1 (GAC, 2016:21) and then 1.9:1 in 2017 (GAC, 2019:30). The national HIV incidence among adults had gradually but steadily decreased from 3.6% to 1.67% between 2003 and 2017 (GAC, 2014:13; GAC, 2019a:1). The population of persons living with HIV at the close of 2017 was estimated at 313, 063 of which majority were women estimated at 65% (GAC, 2019a:30).

The disease burden, however, differs within the regions and the districts in the country. Regional prevalence ranged from 0.2% in rural areas to 2.2% in the urban centres according to the 2017 HIV estimates. Within the districts in the regions, the prevalence ranged between 5.64% in the urban and endemic areas to 0.00% in remote and rural areas. Volta Region has a prevalence of 1.6% (GAC, 2019a:37-39) in 2017. It contributed 13.9% of the national population of persons

living with HIV. (GAC, 2019a:33). In 2016, the Volta Region was one of the two regions with the highest national HIV prevalence among pregnant women attending antenatal clinic which was estimated at 2.7%; above the national value of 2.4% (GAC, 2017:1).

As a member of the United Nations, Ghana's response to the epidemic is guided by the WHO's evolving HIV response frameworks. Ghana's HIV response includes structural, behavioural and biomedical strategies across the country under the "know your epidemic, know your response" theme (Piot *et al.*, 2015:209; GAC, 2016:20). It has made modest gains over the years. National prevalence has reduced. New HIV infections and AIDS-related deaths are on the decline but with increasing numbers of PLHIV (GAC, 2019a:12-13). Ghana was among the 21 priority countries from SSA who were earmarked for rigorous PMTCT (UNAIDS, 2014:233) – an indication of high numbers of WLHIV who get pregnant with commensurate high levels of vertical transmission. Currently, mother to child transmission has declined by 50% (UNAIDS, 2014:9; GAC, 2019a:26) in Ghana.



Gains were also made with increasing HIV testing and counselling, condom use, antiretroviral therapy among others (GAC, 2015a:34). To continue with the gains made, the Ghana national HIV and AIDS strategic plan for the year 2016 to 2020 had outlined five areas of selected activities for implementation geared towards ending AIDS as a public health problem by 2030. These include targeted behaviour change, key population management, condom promotion and distribution, prevention of mother-to-child transmission of HIV and the management of people living with HIV (GAC, 2016:6-8).

Though the outline for targeted behaviour change interventions explicitly earmarks reducing sexual transmission of HIV in both adult males and females in the general population by 56% through the practice of safer sexual behaviours, the main focus was on condom use (GAC, 2016:28-35). The outline on prevention of mother-to-child transmission of HIV too is silent on peri-conception HIV prevention to partners (GAC, 2016: 51 - 56). The plan is silent on SC as a strategy in the prevention of new HIV infections.

1.3 STATEMENT OF THE PROBLEM

Literature established that many reproductive-aged WLHIV in Sub-Saharan Africa (SSA) attempt pregnancy risking both vertical and horizontal HIV transmission in their quest to fulfil their reproductive goals (Nattabi *et al.*, 2009:962; Bayeza-Kashesya *et al.*, 2010:11; Ngure, 2014:3; Matthews *et al.*, 2017:3). In Ghana, Laar and his colleagues (2015:871) reported that 46% of WLHIV desire to have biological children. Most of the remaining participants (54%) did not desire children due to the achievement of their desired family size but not because of inherent risks of HIV infection.

There is consensus among experts that, to attempt and achieve pregnancy with minimal risk of HIV infection to their partners WLHIV require to make informed choices based on SC education from healthcare workers (Matthews, Bayeza-Kashesya *et al.*, 2017:2-3). However, studies reported that SC services are either lacking or ineffectively delivered in the HIV continuum of care due to HCW ignorance, inadequate knowledge and skills (Davey *et al.*, 2018:6; Kawale, *et al.*, 2015:7; Moodley, 2014:7; Goggin *et al.*, 2014:1002; Laar, 2013a:7).

Though literature is scarce on procreation and SC education for WLHIV in Ghana, the scanty literature available paint a similar situation (Laar, 2013a:5-6). It indicated that though most of the healthcare workers agreed to the right of WLHIV to have their biological children, they were not educated on procreation as an option. The study conducted at three urban hospitals within the nation's capital (Accra) and its surroundings, further revealed that of the 32 nurses and 3 medical officers involved in the study, only 22.9% knew of using antiretroviral medication to help WLHIV conceive safely and only a quarter would advise on sex without condom for procreation (Laar, 2013a:7; 2013b:2).

Some participants also voiced their inability to give “qualified and relevant advice” on the subject in an in-depth interview (Laar, 2013a:4). The participants called out for training on the subject. Also, the absence of standardised guidelines, including a training programme, on the subject further undermines the situation (Laar, 2013a:7; Laar, 2013b:2). It was not clear if these findings hold for healthcare workers in the peri-urban areas of Ghana such as the Volta Region due to the scarcity of literature on both the subject and the settings. More so, there was a dearth of literature on SC training for HCWs. Hence, in the process of addressing the challenges delineated in the Ghanaian context, there was a need to develop a SC training programme for HCWs which was the goal of this study.

1.4 AIM OF THE STUDY

This study aimed to develop a training programme for healthcare workers in the ART Units in the Volta Region of Ghana to facilitate safe conception education among WLHIV.

1.4.1 Objectives

The four (4) specific objectives of the study, with their corresponding research questions, were as follows:

1. To assess healthcare workers at ART units' knowledge, attitude and self-efficacy for providing safe conception education to WLHIV.
 - (a) What are the levels of knowledge and self-efficacy among ART unit healthcare workers, for providing safe conception education for WLHIV?
 - (b) What is the attitude of ART unit healthcare workers towards providing safe conception education for WLHIV?
2. To explore and describe the safe conception needs of WLHIV attending selected ART units in the study site.
 - (a) What are the safe-conception needs of WLHIV attending ART units within the sites?
3. To design a training programme for healthcare workers at ART units on safe conception education of WLHIV.
 - (a) What would be the structure and components of a training programme that ART unit healthcare workers can use for educating WLHIV on safe conception?
4. To pilot and refine the training programme developed for healthcare workers at ART units on safe conception education of WLHIV.
 - (a) How effective and feasible is the training programme developed for ART unit healthcare workers to use for educating WLHIV on safe conception?
 - (b) What are the strengths and weaknesses of the training programme developed for ART unit healthcare workers to use for educating WLHIV on safe conception?

1.5 SIGNIFICANCE OF THE STUDY

There is lack of studies on SC education and training, especially in Ghana. This study assessed the training needs of HCWs at the ART units, in facilitating SC among WLHIV in the quest to meet the women's childbearing needs. The study also delineated SC needs from the perspectives of WLHIV and a section of experts in the field of HIV care. Further, the study yielded a training programme on SC for training healthcare workers which can also be used as a pre-service tool for trainee healthcare workers on the subject. It is expected that these findings may inform policies and guidelines on reproduction among WLHIV in the Volta Region and beyond.

It is also hoped that the training programme will equip HCWs at ART Units with the knowledge and skills needed to educate WLHIV on SC. Consequently, this training tool may also facilitate SC among WLHIV by exposing them to the information needed in making informed choices in the process of meeting their childbearing desires with a resultant reduction in new HIV infections/re-infection of their partners. The study will also add to the existing body of knowledge on HCWs' role in HIV prevention through SC education of WLHIV in the Volta Region and Ghana. Further, the study findings will also serve as a reference in the field of HIV and women's reproductive health.

1.6 DELIMITATIONS

This study focused on female clients who were attending ART units in the Volta Region of Ghana for refills and other HIV healthcare services. It was limited to reproductive-aged women living with HIV of 18 to 49 years old, who were on antiretroviral medication for at least six months and expressed the desire to have a child within the next 24 months.

1.7 DEFINITION OF TERMS

Table 1-1: Operational definition of terms

Terms	Definition
Antiretroviral Therapy Unit	Operational definition - a department or an area within healthcare facilities where persons living with HIV take their antiretroviral refills and get other HIV/AIDS healthcare services.
Healthcare Workers	Individuals who are trained and engaged in activities whose primary aim is to enhance health (WHO, 2006:1). Operational definition - HIV care providers registered as nurses (of all cadres), midwives or nurse-midwives working in, or affiliated to ART Units in the Volta Region of Ghana.
Safe Conception	Observation of evidence-based strategies to minimize HIV transmission risk while persons living with HIV and their partners attempt pregnancy (Heffron et al., 2015:1). Operational definition - WLHIV attempting and or achieving pregnancy with minimal risk of infection/reinfection to their male partners.
Self-efficacy	a conviction that one can successfully execute a required behaviour to produce outcomes (Bandura, 1989:1179). Operational definition - HCW's self-report of his/her ability to deliver SC education to WLHIV.
Training	Organised activities geared towards imparting instructions for recipients to attain a required level of knowledge and skill (Business Dictionary, 2019). Operational definition - organised activities aimed at instructing HCWs to attain required knowledge and skill in SC education.
Training programme	a long-term training activity comprising a series of courses to be offered (Business Dictionary, 2021). Operational definition - a training instructional guide designed to equip ART Unit HCWs with knowledge and skills for SC education of WLHIV.
Women living with HIV	Operational definition - reproductive-aged women (18 - 49 years) living with HIV who received care at the ART Units in the Volta Region.

1.8 ORGANISATION OF THE THESIS

The whole thesis is segmented into five sections. Each section contains at least a chapter. Section one outlines orientation to the study as chapter one and the literature review in chapter two. The literature review covers the burden of HIV among women living with HIV, the HIV response in

the context of reproductive health, the socio-cultural context of childbearing among WLHIV and the use of SC in this regard as a harm reduction strategy yet a missing link in the prevention of mother to child transmission programme. It also features a discussion on the importance of SC to ending AIDS as a public health problem by the year 2030.

Section two describes the empirical study at the need assessment stage, and presents work related to objectives one and two. It contains chapters three, four and five. In chapter three methodology of the study is dealt with. The adopted intervention research with the application of intervention mapping steps is discussed alongside the survey and qualitative exploratory designs used. Data collection and analysis techniques and procedures are also described in this chapter. The findings, discussion and conclusion of the quantitative and qualitative studies are presented in chapters four and five respectively. The development of the SC training programme is described in chapter six which constitute the third section.

Section four describes the piloting and evaluation of the SC training programme developed. The section has three chapters. Chapter seven is about the methodology of the piloting. The quantitative results from piloting the SCTP is presented in chapter eight while the qualitative findings are described in chapter nine. Also in chapter nine is the discussion of both the quantitative results and the qualitative findings from the SCTP piloting.

The last section (five) has chapters ten and eleven. The former contains the presentation of the revised but summarized version of the SCTP after effecting the suggested recommendations from the piloting. The last chapter of this sections outlines the conclusion and recommendations from the study.

1.9 CHAPTER SUMMARY

Human immunodeficiency virus infection remains a global public health burden but SSA is the worst hit. Advances in medical science have drastically reduced HIV's devastating morbidity and mortality toll. With the advent of antiretroviral therapy, HIV infection has evolved into a chronic disease that can be managed. More people living with HIV are therefore living longer and healthier lives, most of whom are reproductive-aged women. The growing number of this population is reported alongside increasing desire for having their biological children which is their legal right but laced with the risk of both vertical and horizontal HIV transmission. Safe conception strategies are established as risk reduction methods by which WLHIV can meet their reproduction goals. However, this strategy is not routinely offered to WLHIV. Lack of adequate knowledge and skill on the strategy coupled with poor attitude toward childbearing by WLHIV were some of the challenges limiting the rendition of SC education. In Ghana, the absence of guidelines, including training programmes, were additional limitations identified. The development of a SC training programme may therefore make a crucial contribution towards helping WLHIV meet their reproduction goals while minimising the risk of infection to their partners.

CHAPTER TWO: LITERATURE REVIEW

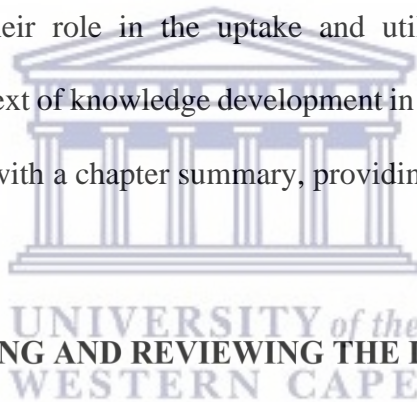
2.1 INTRODUCTION

A literature review is a written summation that presents synthesised current and relevant knowledge existing on a topic of interest. It is the product of systematic identification, location, analysis and synthesis of knowledge sources of published and unpublished sources such as books, articles, dissertations, reviews, reports and other such related sources (Creswell and Creswell, 2018:26; Bloomberg and Volpe, 2012:2). Because it helps the researcher to have the current state of the knowledge in the field to help situate their own research, it is a very important step in the research process (Onwuegbuzie and Weinbaum, 2016:266).

This study sought to develop a SCTP for healthcare workers at the antiretroviral therapy units in the health facilities in the Volta Region of Ghana. The researcher sought to determine healthcare workers' knowledge, attitude, self-efficacy and interest in SC education of women living with HIV. Besides, she also sought to understand the needs of reproductive-aged women living with HIV as they attempt pregnancy in the process of meeting their reproductive goals. This information was to help her develop a SCTP for the healthcare workers in the antiretroviral therapy units in the Volta Region. To conduct this study, a critical review of the literature was done which spanned throughout the protocol development, data collection and analysis as well as the synthesis stages (Onwuegbuzie and Frels, 2015:91; Wisker, 2015:71). Throughout the review, the researcher attempted to point out important gaps and omissions in particular segments of the literature as and when they became apparent. Also, relevant contested areas or issues are identified and discussed.

Each section of the literature review ends with a synthesis that focuses on research implications (Creswell and Creswell, 2018:30; Boote and Bellie, 2005:7).

The reviewed literature presented in this chapter begins with a description of the timeline of HIV/AIDS. It also describes the burden of the disease among WLHIV. It presents the socio-cultural context of procreation among WLHIV, their needs for attempting pregnancy safely especially in serodiscordant relationships as well as the importance of SC as a preventative HIV response strategy in the context of the 95-95-95 agenda. The factors that influence fertility were outlined. The chapter also touched on HCW knowledge, attitude, self-efficacy and practices regarding SC education and their role in the uptake and utilization of SC strategies. The construction of SCTP in the context of knowledge development in nursing and midwifery was also outlined. The presentation ends with a chapter summary, providing a recap of the main themes in the reviewed literature.



2.2 IDENTIFYING, SELECTING AND REVIEWING THE LITERATURE

The researcher conducted a search of keywords from data sources such as PubMed, CINAHL, ERIC, Scopus, WHO sites, Google Scholar, JURN, SAGE and Medline for literature on SC in WLHIV (Onwuegbuzie and Frels, 2016:96-97). The keywords used in the search included the following: safe conception, pregnancy in HIV, reproduction in HIV, discordant couples, concordant couples, assisted reproduction, reproduction and HIV, procreation in HIV, childbearing in HIV, invitro fertilization in HIV, fertility timing in HIV, fertility intention in HIV, fertility desires in HIV, reproductive rights in HIV, self-insemination, vaginal insemination and HIV reproductive health (Onwuegbuzie and Frels, 2016:101).

Literature retrieved included peer-reviewed articles, conference papers, abstracts and reports, books, chapters of books and theses. Besides searching the various databases, libraries were also visited for books and bulletins. Using references of selected materials, individual searches were conducted for articles with the help of the library staff and library facilities through which unavailable materials were loaned from other institutions. Only literature produced in the English language were selected for the review. Both quantitative and qualitative materials were reviewed.

2.3 THE TIMELINE OF HIV AND HIV RESPONSE

Between 1980 and 1981, five gay males in their prime were found with a disease that was later diagnosed as HIV infection (Fee and Brown, 2006:980; CDC, 1981:250). By the fifth year, HIV infections were recorded from each region of the world (UNAIDS, 2015a:82-83). It is almost four decades now since HIV was first reported officially in Los Angeles (Piot *et al.*, 2015:174; De Cock, 2011:3; CDC, 1981:250). The HIV/AIDS has evolved into a chronic disease and a burden of global public health importance (Dwyer-Lindgren, 2019:189).

Though much is known about HIV/AIDS, its origin remains a much-debated topic. A school of thought proposed that HIV originated from Kinshasa of The Democratic Republic of the Congo in Africa and spread to other countries and continents including Haiti (Feldman, 1986:38; Melhuish and Lewthwaite, 2018:356; Mabayoje, 2016:2). However, Farmer (2006:xii) and Shilts (1987, as cited in Doyal and Doyal, 2016:2) strongly argues in contradiction. Farmer posits that Haiti's epidemics was a spillover from America and not from Africa. Further, Farmer (2006:xii), a physician anthropologist, elaborated in his book (AIDS and accusation: Haiti and the geography of blame) that it was the North American tourists who spread the virus to the United States and

other places. With the ravaging sequelae of the disease leading to death, the quest to find a solution took centre stage. Thus, despite the different schools of thought on the origin of HIV/AIDS, a concerted effort was initiated and sustained in response to the fulminating disease which had quickly assumed a global status (De Cock *et al.*, 2011; UNAIDS, 2015a:83-85). The response for HIV management and prevention advanced gradually and internationally cutting across all sectors of human endeavour – health systems, science, research, finance, judicial, activism and others (UNAIDS, 2015a:83-89).

The global biomedical and scientific community-focused efforts towards gaining insight into the disease. This effort chalked up successes. The virus, HIV, was discovered in 1983 as the causative organism of the infection (De Cock, 2011:3; Barr-Sinoussi *et al.*, 2013:877). The lifecycle of the virus, delineating its modes of transmission and acquisition, were discovered alongside its molecular biology which was crucial to treatment and prevention. It was also discovered that HIV exists in two main strains; HIV-1 and HIV-2 (Lampejo, 2013:420) and is present in body fluids such as blood, semen, vaginal fluids and breast milk. It can be transmitted horizontally through sexual intercourse, parenteral route, intravenous drug use with infected needles and occupational injuries. It can also be contracted vertically through mother-to-child transmission (Kassaye and Levy, 2009:39). This makes comprehensive reproductive health an important aspect of HIV prevention efforts (Kharsany, *et al.*, 2016:35).

Other milestones achieved include the advent of the highly efficacious antiretroviral medication which revolutionised the management of the epidemic in the 1990s (Barré-Sinoussi *et al.*, 2013:878). The coordinated and upsurge efforts in the sphere of biomedical response, especially the combination of antiretrovirals medications has led to great improvement in HIV management

(Barré-Sinoussi *et al.*, 2013:879). Currently, there are over 30 different medications available for the different HIV treatment options. This includes daily dosing of tablets, long-acting injectables (National Institute of Health (NIH), 2019), and vaginal rings (Palanee-Phillips *et al.*, 2015:3). Meanwhile, efforts to find new preventive strategies such as vaccines or a cure are ongoing and are at various stages of development with successes and failures. Notable among all these developments and research done were the inclusion of the HIV vaccine trials, vaginal gels and the stem cell transplant-based treatments (Barré-Sinoussi *et al.*, 2013:880). Antiretroviral treatment has become the backbone of many HIV preventive and management programmes such as PMTCT and risk reduction interventions because it can be used for both primary and secondary prevention (Piot *et al.*, 2015:190).

In parallel with the biomedical effort to fight HIV, was the socioeconomic response too. This ranged from the formation of structured task forces and agencies such as the UNAIDS, Global Fund to Fight AIDS, PEPFAR and fund raising. These structured agencies ensured coordination of global, regional, national and local evidence-based initiatives in response to HIV (Piot *et al.*, 2015:181; De Cock *et al.*, 2011:11). Notable in this structured system is the civil society response through strong activism and advocacy thereby enforcing management of HIV within the pathways of human rights and social justice (Barré-Sinoussi *et al.*, 2013:881; UNAIDS, 2015a:88-89). At the global and regional levels, evidence-based action plans have been drawn to contain HIV/AIDS. These included the Millennium Development Goal 6, and currently, the Sustainable Development Goal 3. These are implemented at the international, national and local levels (UNAIDS, 2015a:88). These structures also charted the path of comprehensive reproductive health whereby persons living with HIV can freely decide whether or not to have a child and not be coerced into

sterilization or other family planning methods (Matthews *et al.*, 2017:3; Bujan and Pasquier, 2016:922).

Amid the global response to HIV/AIDS management, the epidemic itself has gone through many phases. The condition was understood as a fatal disease with no remedy in the 1980s, then as a chronic manageable condition after ARVs were discovered which ameliorate the disease progress. Also, from a condition termed the '4 – H club' (for its predominance in homosexuals, heroin addicts, haemophiliacs and Haitians), the epidemiology of the HIV epidemic changed from a disease of the gays and Caucasians to that which disproportionately affect people of colour and women, especially in Sub-Saharan Africa (Towner, 2008:60-62; Kharsany *et al.*, 2016:34; UNAIDS, 2019a:16). Being named among people of questionable identity, the diseased was placed in derogatory limelight with othering and naming such as gay plague, '4 H-club' and GRID (gay-related immune deficiency) in its formative years. Coupled with the poor initial response of segregation and distancing, HIV/ AIDS has assumed a stigmatised identity. Currently, stigma still poses a major problem with the global HIV response (Nyblade *et al.*, 2019:3; Doyal and Doyal 2016:1; UNAIDS, 2015a:80; Haghdoost and Karamouzian, 2012:14).

In the absence of specific treatment in the earlier days, the victims suffered severely and died as the disease progressed rapidly. Life expectancy was approximately ten years or less depending on the clinical stage of the diagnosis. Thus, before the advent of the ARVs, contracting HIV was lethal; it was a frightening death sentence (UNAIDS, 2015a:46). Being disease named first among homosexual men with sexual intercourse as the main mode of transmission categorised the disease poorly arousing marked and persisting social discrimination and stigma (Bujan and Pasquier, 2016:919; Doyal and Doyal 2016:1; UNAIDS, 2015a:80; Haghdoost and Karamouzian, 2012:14).

This poor attitude towards HIV and PLHIV is persistent in the healthcare systems, negatively influencing both the rendition and uptake of care and therefore need addressing through appropriate programmes (Nyblade *et al.*, 2019:1-2).

2.4 THE STATUS OF THE HIV/AIDS EPIDEMIC

The HIV/AIDS epidemic remains a major public health burden (UNAIDS, 2019a:1; UNAIDS, 2019b:5; WHO, 2020:1). Progress of the response to HIV is determined using mathematically modelled estimates of HIV incidence, prevalence and AIDS-related deaths. Reduction in new HIV infections is an important landmark – it indicates the effectiveness of preventative HIV response strategies (UNAIDS, 2019b:5). With different combinations of the HIV response strategies for the different sub-populations of PLHIV for both primary and secondary prevention, it is expected that AIDS-related mortality and HIV incidence would decrease drastically. However, there is a mismatch in these estimates as painted in the general global picture. There are wide diversities in reported trends between regions, countries and even within-country estimates. Though generally, a high decline of 33% from 2010 to 2018 was reported in AIDS-related mortality with a comparatively low reduction in new HIV infections (a 16% reduction within the same period); not every country recorded decreasing new HIV infections. Some reported a rise. Thus, the numbers of persons living with HIV are accumulating (UNAIDS, 2019b:5-6) with majority being females in their reproductive age. Bekker and colleagues (2018:392) opined that if the trend of decline in new HIV infections remains at such a low pace, a surgency of the epidemic may be unavoidable.

In the WHO regions and sub-regions, disparities are observed in the dynamics and profile of the HIV epidemic. Prevalence estimates show that 38 million people were living with HIV at the close

of 2019 (UNAIDS, 2020b:9) and more than two-thirds of this population were living in SSA (WHO, 2020:1). Estimates of new HIV infections, an important marker of the effectiveness of preventative HIV response, are revealing disturbing lag trends concerning the goal of a 75% reduction in incidence by 2020 and for that matter the 2030 agenda of ending AIDS as a public health problem (UNAIDS, 2020b:3). The goal is said to be off-track as HIV mortality reduces faster than HIV incidence swelling up the population of PLHIV (UNAIDS, 2020b:2). Even with the total global reduction of HIV incidence at 16% (thus, from 2.1 million to 1.7million) across nations, there were stark contrasting ratios from the WHO regions and sub-regions (UNAIDS, 2019b:6-8).

According to Congressional Research Service (CRS), SSA accounted for more than half of the 1.7 million new HIV infections in 2018 (Tharakan, 2019:1) which occurred mainly through reproductive activities – risky sexual behaviours and mother-to-child transmission (Kharsany and Karim, 2016:35; UNAIDS, 2019b:2). While a decline ranging between 28% (highest) in Africa and 9% (lowest) in Asia and the Pacific were estimated, an increase of at least 7% was reported from Latin America, Europe, Central Asia, Middle East and North Africa (UNAIDS, 2019b:6-8). The disparity is further observed in the profile of the new HIV infections. Key population, which make up a small proportion of the general population rather contributed to more than half the estimated value of new HIV infections globally, in 2018 (UNAIDS, 2019b:9).

More so, the cohort of the key population that dominated with the incidence also differ within the sub-regions. In 2018, gay men and other men who have sex with men dominated in their contribution to HIV incidence in Latin and Northern America, Asia, the Pacific, some parts of Europe (western and central) and the Caribbean. However, in the Middle East, North Africa,

Central Asia and central Europe injection drug users contributed most. In Western and Central Africa, clients of sex workers and partners of other key populations generated more new HIV infections (UNAIDS, 2019b:11). All these characteristics suggest that different interventions are needed to respond to the different profiles presented in the different contexts.

Yet again, another characteristic exhibiting disparity on the profile of the HIV epidemic is the disproportionate representation of females in both prevalence and incidence estimates. Of the estimated 37.9 million people who were living with HIV at the close of 2018 out of which the adult population (15 years and above) was 36.2 million, females (adult) were 18.2 million -1.4 million more than the males (UNAIDS, 2019b:16). Women and girls constitute over 50% of the 37.9 million people living with HIV. The situation is even worse in SSA (UNAIDS, 2019b:16).

2.5 WOMEN LIVING WITH HIV IN SSA

Sub-Saharan Africa remains the most burdened region, even with a focus on females living with HIV. The majority of the 6,200 young women who become infected with HIV weekly are from the region and four in five of the new infections that occur are seen among the younger (15-24) reproductive-aged women (The Global Fund, 2020:3; UNAIDS, 2019d). In 2017, women formed 56% of the population of people living with HIV; with those of reproductive age being the majority subpopulation (UNAID, 2018:6). In that same year, 59% of the new HIV infections in adults in the region occurred in women and girls (UNAIDS, 2020b:13). In 2020, HIV incidence in women and girls increased to 65% (UNAIDS, 2021:26). In descending order, South Africa, Mozambique, Kenya, Tanzania, Uganda, Zimbabwe, Zambia, Malawi, Ethiopia and Botswana were the first ten countries in the Southern and Eastern African countries with an estimated 200,000 to 4.8 million

women living with HIV (≥ 15 years) at the close of 2017. South Africa topped in this group (4.8 million) (UNAIDS, 2019a:7). Nigeria, Cameroon, DR Congo and Côte d'Ivoire had more than 200,000 women living with HIV in the same period in the Western and Central African regions. Nigeria alone had an estimated 1.1 million women living with HIV. Ghana, a fifth in this category had an estimated 120 thousand (UNAIDS, 2019a:1).

Increasingly, researchers examined the disproportionately high incidence of HIV in women. It was established that biological factors, harmful gender norms (gender roles, violence and inequalities), financial independence among others contribute variedly to the phenomenon (UNAIDS, 2017:6; The Lancet, 2019:e441). Thus, until these factors are overcome, they will continue to swell up the population of WLHIV. In this milieu, it is obvious that WLHIV, especially those of reproductive age, have become a population of risk as they contribute to both horizontal and vertical HIV transmission in the process of meeting their reproductive rights.

These disparities, in both prevalence and incidence estimate profiles, hold crucial implications for HIV response regarding the right mix of both treatment and preventive strategies in meeting the diverse identified needs (Piot *et al.*, 2015:171). Using the life-course approach, the increasing population of reproductive-aged PLHIV, especially the cohort of WLHIV, calls for holistic reproductive health services in the HIV care cascade that attends to the needs which characterise each stage of life; and this must include provision for safe procreation for those who so desire. However, SC education is not routinely though there are well-organised programmes to prevent mother to child transmission once the women get pregnant creating a window for horizontal infection of uninfected male partners (Mmeje, Njoroge *et al.*, 2015:156).

2.5.1 Profile of WLHIV in Sub-Saharan Africa

The global HIV epidemic has evolved to become not only a chronic condition but also a predominantly female disease in SSA over the decades as revealed in the 2017 incidence estimate where 59% of all new cases were females (UNAIDS, 2019a:6). Though the HIV feminization phenomenon is reported in Latin America, the Caribbean, Eastern, Western and Central Europe, parts of Asia, it is more entrenched in SSA (UNAIDS, 2019c:12-13). The majority of the women living with HIV are also observed to be in their reproductive ages (15 – 49 years) (UNAIDS, 2019c:8) but those of the younger age (15-24 years) were the most affected (Kharsany *et al.*, 2016:35; UNAIDS, 2019c:9).

Of the 6000 young women (15-24 years) infected with HIV in 2018 globally, there is a heavier toll on SSA where four in five new HIV infections are among those of age 19 years or less; who are most likely to be in rural areas where HIV determining gender-related factors including early childbearing are entrenched (UNAIDS, 2019a:8-10). Thus, being mostly young people, the population has high reproductive potential as observed by Nattabi *et al.*, (2009:961) from a systematic review of 29 articles on fertility among WLHIV. The authors observed that younger age is associated with the desire for childbearing among WLHIV (Nattabi *et al.*, 2009:961). It is known that young WLHIV have similar fertility desires as their uninfected counterparts (Finocchiaro-Kessler *et al.*, 2012:6).

It is also known that more than 50% of women aged 15-24 get pregnant before 18 years in SSA (UNAIDS, 2019a:8) and WLHIV have been pregnant or delivered -post-HIV diagnosis (Ngure *et al.*, 2014:3; Schwartz *et al.*, 2012:71). These observations coupled with the awareness that three-

quarters of reproductive-aged adults in SSA report heterosexual relation (WHO, 2012b:6), place reproductive-aged WLHIV as an important HIV risk group. This is because apart from the sheer numbers of this fast-growing population (from both acquired and perinatal HIV infection) (Prieto *et al.*, 2017:3; Badell *et al.*, 2013:2), it is also capable of both vertical and horizontal transmission of HIV pointing to the need for appropriate reproductive services that are comprehensive enough to meet their needs whether they desire biological children or not (McCarthy *et al.*, 2012:124). This is more importantly so in an era when evidence exists that differences in fertility, as well as fertility motivations and intentions between WLHIV and their HIV negative counterparts, are narrowing over time as ARVs are reaching more of the PLHIV (Marston, *et al.*, 2016:7-8; Finocchiaro-Kessler *et al.*, 2012:5-6) emphasising the need for holistic reproductive health care that make room for their rights to attempt pregnancy safely for this population (WLHIV) (Kharsany *et al.*, 2016:35; Matthews *et al.*, 2017b:8; Steiner *et al.*, 2013:1363). As Victoria Beckham stated, women and girls are very vital to ending the HIV epidemic and this can only happen if their rights are respected (UNAIDS, 2015a:345).

2.6 REPRODUCTIVE HEALTH AND HIV

Reproductive health is a broad term that is used to refer to: "... a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes. Reproductive health, therefore, implies that people can have a satisfying and safe sex life and that they can reproduce and the freedom to decide if, when and how often to do so. Implicit in this last condition are the right of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of their choice as well as other methods of their choice for regulation of fertility which is not against

the law, and the right of access to appropriate health-care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant. In line with the above definition of reproductive health, reproductive health care is defined as the constellation of methods, techniques and services that contribute to reproductive health and well-being by preventing and solving reproductive health problems.” (UNFPA, 2014:59).

From this excerpt, the components of reproductive health include conception, pregnancy, parturition, breastfeeding, safe motherhood, family planning, infertility (prevention and treatment), abortion, prevention and management of sexually transmitted infections, reproductive tract malignancies, infant and child survival (growth and development), puberty, menopause and gender issues (including prevention of unsafe practices and violence) among others. It also projects reproductive health as a right as well as a socio-cultural issue that connects with physical and mental wellbeing. Thus, reproductive healthcare entails services around the reproductive organs and their functioning or processes concerning the life-course approach (van der Spuy, 2009:S6; Wirtz, 2016:1). The inherent relationship between reproductive health, reproductive rights and HIV has long been established and extensively discussed with international consensus (WHO, 2005:3).

Besides the fact that HIV is primarily a sexually transmitted disease and its transmission and acquisition occur mainly through sexual encounters, the majority of the persons living with the disease are in their reproductive years with fertility intentions (Matthews *et al.*2016:5). Also, the disease is transmitted through reproductive processes such as pregnancy, labour, delivery and breastfeeding termed mother-to-child or vertical transmission (WHO, 2017:28). Apart from these

direct associations, other complex and interconnected relationships through which HIV impact reproductive health, reproductive functions and processes and vice versa have also been described amid socio-cultural and economic intervening factors (STRIVE, 2020; Bajunirwe *et al.*, 2019:5). For example, HIV infection accelerates the acquisition and transmission of other sexually transmitted infections and vice versa (Mason *et al.*, 2015:267; Newman *et al.*, 2019:4). Further, the acquisition and transmission of HIV are mediated by some of the same root factors that affect reproductive health status. Some of these root factors include gender inequalities and vulnerabilities engendered in cultural dimensions like child marriages, traditional fertility tests on women, girl child illiteracy, female genital mutilation and widowhood cleansing rites which impact HIV and in turn, are also affected by HIV (WHO, 2005a:5; Myer *et al.*, 2005:136; Sovran, 2013:35-36; Kharsany, *et al.*, 2016:35; Bajunirwe *et al.*, 2019:5). More so, reproductive modes of HIV transmission (sexual intercourse, pregnancy, parturition and breastfeeding) are the drivers of the epidemic, especially in SSA. It is documented that, by far, the reproductive mode of transmission has been, generally and persistently, the leading means of contracting HIV and accounts for over two-thirds of all new HIV infections worldwide and in SSA (Gayle and Hill, 2001:330; UNAIDS, 2018a:9; GAC, 2016:28). Some effective barrier methods of contraception such as condoms are effective against HIV acquisition (UNAIDS, 2015a:83). Thus, the synthesis of these commonalities shows that HIV is inexorably linked with reproductive health. Therefore, ensuring comprehensive and integrated reproductive health service for PLHIV is imperative for effective HIV response (Mmeje *et al.*, 2014:84).

It is opined that the most significant impact of HIV on WLHIV's reproductive health is, arguably, on their fertility because, until the year 2000, fertility among WLHIV was one of the most debated

reproductive health topics due to the many ethical dilemmas it generated (Myer *et al.*, 2005:136; Bujan and Pasquier, 2016:198). Currently, there is increasing acceptance, compared to the earlier vehement prohibition among the medical community, that WLHIV should have biological children (Laar *et al.*, 2013:4; Matthews *et al.*, 2014:214); Iliyasu *et al.*, 2019a:538) but the vertical and horizontal HIV transmission and acquisition associated with exercising this reproductive right raise issues of ethical justification. Even worse are the sequelae suffered by the perinatally infected child and poor maternal outcomes. But it is argued that with the game changers (ART and SC strategies), WLHIV should be assisted to exercise their reproductive rights just like their uninfected counterparts (Bujan and Pasquier, 2016:922; Matthews *et al.*, 2017:9).

2.6.1 Fertility, fertility desires and intentions among WLHIV

Literature accumulating over the years on the reproductive health aspect of the HIV epidemic indicates that WLHIV have fertility desires and intentions (Selwyn *et al.*, 1989 as cited in Steiner *et al.*, 2013:1359; Cooper *et al.*, 2007:277; Nattabi *et al.*, 2009:961; Finocchiaro-Kessler, 2010:1109; Ngure *et al.*, 2014:3; Berhan *et al.*, 2013:8; Nobrega *et al.*, 2007:263; Mindry *et al.*, 2013:595; Wekesa and Coast, 2014:4; Nkube *et al.*, 2012:32; Black *et al.*, 2016:1586). A historical review identified that one of the first studies that focused on fertility (procreation) among WLHIV was in 1989. The study compared how an awareness of one's HIV positive status influenced her decision to abort or keep a pregnancy among HIV-positive and HIV-negative injection drug users. The authors concluded that other factors, aside from awareness of one's HIV-positive status, influenced fertility decision making in WLHIV (Selwyn *et al.* 1989 as cited by Steiner *et al.*, 2013:1359).

The term *fertility* has different meanings depending on the context in which it is used. In the medical context, it refers to the ability to have children. In demography, however, it refers to the production of offspring or children (Frank, 2019). Fertility intention, fertility desires and fertility decision making bear on the second definition – making plans about producing children. Miller (2011:78) observed that the phrase ‘fertility intention’ and ‘fertility desires’ are used interchangeably though they are not the same. He maintained that the difference between the two terms is that desire “simply reflect a wish to achieve a goal through some sort of action, whereas intentions involve a specific decision to pursue an actionable goal, with an associated commitment and, commonly, a plan for implementing the decision.” Thus, fertility desire reflects one’s wish to have a child but fertility intention, a product of desire, has plans outlined as to how one will have the child with a commitment to see it through (Crankshaw *et al.*, 2012:4). Since they are used interchangeably in literature, the researcher used both terms to mean fertility desire since both intersect on that meaning (Miller, 2011:77).

The conclusion that factors other than an awareness of one’s HIV-positive status, influenced fertility decision making (Selwyn *et al.* 1989 as cited by Steiner *et al.*, 2013:1359) is supported by other authors (Cooper *et al.*, 2007:277; Cooper *et al.*, 2009:42; Matthews *et al.*, 2013:463- 464; Shiferaw *et al.*, 2019:4). It is in this regard that Sear *et al.*, (2016:2) noted that human fertility is a complex phenomenon with many influencers which may be physiological or psychological interwoven with sociocultural factors. These influencers are observed at play in literature regarding fertility and fertility decisions among WLHIV. One of these is society’s value of childbearing (Gruskin *et al.*, 2008:1746; Nattabi *et al.*, 2009:966).

Sub-Saharan Africa is known for its pronatalist values and high fertility. With an estimated rate of 7.2 children per woman, Niger has the highest fertility in the world in 2016 (UNICEF, 2017a:8). Fertility rate is estimated at 2.6 in South Africa, 3.3 in Swaziland and 5.9 in Uganda. These are a few southern and eastern countries devastated by the HIV in the Sub-Saharan Africa. In western African countries, fertility rate is equally high. It is projected that Nigeria, which is the country with the highest HIV burden in this sub-region, accounts for 20% of all births in Africa and 5% of the global total. Further, it is also estimated that 120 million births will occur in Nigeria between 2016 and 2030. Côte d'Ivoire, Togo, Benin, Togo and Ghana - which form the Abidjan – Lagos corridor alliance with multi-country HIV programmes – have fertility rates of 5.1, 5.2, 4.7 and 4.2 respectively at the close of 2015 (UNICEF, 2017a:9). Likewise, high fertility desires and childbearing were also observed among WLHIV across the region (UNICEF, 2017b:1). With the observation that fertility among WLHIV and their uninfected counterparts is similar (Finocchiaro-Kessler *et al.*, 2012:6), the latter (WLHIV) must be equipped with SC education to enable them to achieve their reproductive goals while ensuring the prevention of vertical and horizontal HIV transmission.

In the early years of the disease (before 2000), research on reproduction in HIV focused on fertility at the individual and population level. Along the line, other areas such as fertility intentions and desires among WLHIV were also studied (Schwartz and Baral, 2015:32). Though generally, decreased fertility was reported among WLHIV compared to their uninfected counterparts globally (Zaba and Gregson, 1998:S41; Massad *et al.*, 2004:285; Chen and Walker 2010:ii24). it was noted that the younger age group of (15-20) had the highest fertility rate among WLHIV (Chen and Walker 2010:25). The decreased fertility in WLHIV was attributed to biological, psychological

and social factors. Thus, it was explained that general ill-health from comorbidities and their stresses had negatively impacted the reproductive system thereby impeding their optimal function.

In the same vein, psychological disorders related to the disease such as shame and guilt as well as stigma decreased sexual urge, financial difficulties and poor access to HIV reproductive care (social factors) were used to explain the observed decreased fertility and fertility desires (Khawcharoenporn and Beverly, 2016:180-185). Longer duration of living with HIV was also found to be associated with a relative reduction in fertility and subfertility (Marstson *et al.*, 2017:S69). Decreased fertility notwithstanding, the fertility decision-making process itself was also found to be influenced by unfavourable societal and medical mistreatments which caused some WLHIV to rescind childbearing (Ingram and Hutchinson, 2000:122; Cooper *et al.*, 2007:280). Subfertility among WLHIV increases the inherent risk of HIV transmission because of the prolonged attempt necessary to achieve conception. Safe conception education is therefore needed to inform and also guide fertility behaviours among WLHIV (Mmeje *et al.*, 2014:81).

With the advent of the highly active antiretroviral drugs and subsequently improved quality of health, fertility rates in WLHIV are increasing. Mbita and colleagues (2019:5) in a large retrospective cohort study of over 6000 WLHIV in Tanzania observed that fertility post-ART was higher than pre-ART among WLHIV. Overall, fertility was found to be 1.3 times higher in WLHIV on ART compared with their counterparts not on antiretrovirals (Mbita *et al.*, 2019:5). Similarly, some studies have reported that the differences in fertility rates between reproductive-aged WLHIV and their uninfected counterparts are becoming narrow (Myer, 2010:4; Marston, 2016:8). In the same vein, a review of literature involving 29 studies (carried out from 1995 to 2008; from

America, Europe, Asia and Africa) revealed rising fertility desires and intentions across the world (Nattabi *et al.*, 2009:951-960).

In Africa studies from South Africa, Kenya, Uganda, Tanzania, Mozambique and Ethiopia reported fertility intentions among WLHIV (Cooper *et al.*, 2007:278; Cooper *et al.*, 2009:S42; Matthews *et al.*; 2016:5; Kaida *et al.*, 2010:352; Wekesa, 2014:4; Beyeza-Kashesya *et al.*, 2010:11; Hayford *et al.*, 2012:7; Mmbaba, 2013:8; Asfaw and Gashe 2014:3). In Ghana, Laar and his colleagues (2015:872) reported that over 45% of reproductive-aged WLHIV recruited for the study desired to have children. The rest mentioned achieved fertility goals, poor health conditions and economic reasons precluding their desire for children (Laar *et al.*, 2015:5). In Gabon, Okome-Nkoumou *et al.*, (2015:4) reported 78% fertility among PLHIV from a study in which over 79% of the participants were females. These findings in addition to the observation that there was no significant difference in fertility desires of young WLHIV and their uninfected counterparts in a comparative study (Finocchiaro-Kessler *et al.*, 2012:6), further emphasise the need for SC education for informed and safe fertility behaviour.

Another observation about fertility desires and intentions is that the proportion of WLHIV who expressed such interests, vary widely from one place to another and thus, making identification of those who need SC education blurred and challenging. Fertility desires reported among PLHIV ranged between 20% to 78%; the highest (of above 70%) was reported in South Africa and Gabon (Stanwood, *et al.*, 2007:4; Finocchiaro-Kessler *et al.*, 2010:1109; Schwartz *et al.*, 2012:73; Laar, 2015:5; Okome-Nkoumou *et al.*, 2015:4). In the same vein, there is much variability in the correlates that are associated with the phenomenon. Nattabi, *et al.* (2009:967) in their systematic review (of 29 studies) outlined many of these correlates to include socio-demographic, health,

psychological and stigma related factors which were confirmed in other studies (Finocchario-Kessler *et al.*, 2010:1108; Song *et al.*, 2019:4; Shiferaw *et al.*, 2019:1). The number and combination of these factors differed in the various contexts studied implying extensive and effective communication with WLHIV to identify those who need SC services to enable them to receive the needed education in exercising their right to procreate.

2.6.2 Factors influencing fertility desire and intention among WLHIV

Studies of the effect of HIV positive status on the fertility desire or intention of WLHIV yielded mixed results. Cliffe and colleagues (2011:1096) reported from a study in the UK that in 45% of their participants, HIV-positive status did not influence their fertility decision-making; those who desired children still wanted to have them while those who never wanted to, stuck to their plans. Laar and colleagues (2015a:874) also reported a similar finding from Ghana where socio-cultural factors rather than HIV-positive status, were very important in determining fertility desires among WLHIV.

On the other hand, Finocchario-Kessler *et al.*, (2010:1110) reported some WLHIV, in their US study, decided they would not bear children because of their HIV positive status. A similar observation was reported from a qualitative study among Black-Americans from the US where WLHIV avoid pregnancy for fear of infecting the children while others, who demonstrated adequate knowledge of HIV preventive measures (such as ART and PMTCT) endorsed pregnancy (Fletcher *et al.*, 2016:5). Further, Cliffe and colleagues (2011:1096) found that some of the WLHIV expressed that, their HIV status had impacted their fertility decision. Eleven per cent (11% out of the 450 participants) who wanted children had reconsidered the timing of their childbirth –

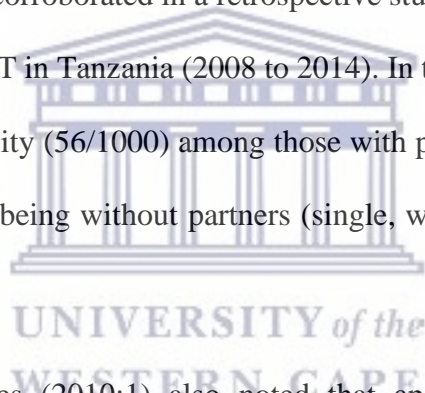
they intended to have their children sooner than they might have otherwise decided - while a third (34.4%) relinquished their fertility desires on account of their HIV-positive status.

Similar findings were also observed in South Africa (Cooper *et al.*, 2007:277) and Mozambique (Hayford *et al.*, 2012:3) where WLHIV desired to have children earlier before their condition deteriorated when they were unable to attempt childbirth. Thus, the decision to have a biological child or not keeps changing over time. There is the need for a provider-initiated and continual conversation on the subject with reviewing of previous decisions to meet the changing needs of SC and contraception as may be necessary.

It is also revealed in literature that age is one of the major influencers of fertility desire and intention in some studies on the subject. Younger WLHIV (30 years or less) were found to be more likely to desire children than the older ones (≥ 31 years) (Abbawa *et al.*, 2015:3; Mohammed and Assefa, 2016:4; Nattabi *et al.*, 2009:961; Kaida *et al.*, 2011:354). On the contrary, Laar *et al.*, (2015:873) and Hayford *et al.*, (2012:8) noted that WLHIV (or women with perceived HIV risk) who were above 30 years had higher fertility desire compared to the younger ones. A similar finding was reported in a comparative study in Kenya that investigated fertility desires in WLHIV and their uninfected partners (Kimanin *et al.*, 2015:7). These findings suggest that all reproductive-aged WLHIV be screened for fertility desires and then educated on SC where necessary.

Aside age, being in a romantic relationship (married or cohabiting) was also found to influence fertility desire in WLHIV. Literature shows that WLHIV who perceive their partner's desire for children are more likely to want to have children (Mohammed and Assefa, 2016:3 Okome-Nkoumou 2015:5; Antelman *et al.*, 2014:3; Bayeza-Kashesya *et al.*, 2010:5; Kaida *et al.*,

2011:354). Furthermore, Antelman *et al.*, (2014:3), in their multi-country (Kenya, Namibia and Tanzania) study on fertility desire noted that women who were in new and recent relationships were more likely to want to have a child. Studies assessing factors associated with pregnancy intentions among WLHIV found that their participants indicated that pregnancy decisions depended solely on their partners; and as such they would have as many children as their partners wanted, even if they (WLHIV) do not want (more) children (Okome-Nkoumou *et al.*, 2015:6; Demissie *et al.*, 2014:6). This was confirmed in quantitative studies from Uganda and Malawi (Atukunda *et al.*, 2019:1555; Kawale *et al.*, 2014:4). That WLHIV in relationships were more inclined to fertility intentions is corroborated in a retrospective study of secondary data from over 6000 non-gravid WLHIV on ART in Tanzania (2008 to 2014). In the study, Mbita and colleagues (2019:4-6) observed higher fertility (56/1000) among those with partners (married or cohabiting) than among those who reported being without partners (single, widowed, or divorced) (between 36 and 38/1000).



Bayeza-Kashesya and colleagues (2010:1) also noted that apart from partners of WLHIV influencing their childbearing decision-making, their relatives' expectation of children from them could also be a contributing factor. Socio-cultural norms and behaviours that value children and thereby encourage childbearing are also influencers of fertility decision-making among WLHIV. In a qualitative study, WLHIV in South Africa indicated that apart from their relatives, society at large expects them to bear children and therefore, they need to have children to justify their status as wives. Childlessness made them unfit for the society they lived in. They, therefore, had decided to have children as their husbands, in-laws and communities expected them, to retain their status and dignity as married women (Cooper *et al.*, 2007:278). Some cultures also value large families

(Wanyenze *et al.*,2013:10-11), hence influencing repeat pregnancies even after HIV diagnosis among WLHIV. Knowing that being in a romantic relationship (married or cohabiting) attracted pressure for a child and the sociocultural context of the partners also determined the number and composition (sexes) of the children desired, is a useful pointer to SC education. A male partner or cultural pressure might demand a male child, which necessitates that a woman living with HIV should have another child even if she did not want it.

With these pressures, it is challenging for WLHIV to obey education on the use of condoms without any information to help them achieve conception. Also, knowledge of these perspectives might create that understanding that providers need to provide education that favour WLHIV's fertility desires (Matthews 2016:3). These insights also call for the involvement of sexual partners of WLHIV in SC education where possible (Crankshaw *et al.*, 2012:5).

Another similar factor that frequently appeared to be significantly associated with fertility intentions is parity. Most of the 29 studies reviewed by Nattabi *et al.*, (2009:961) found that the number of surviving children was a determining factor for having another biological child among WLHIV. This was also observed in other studies (Bayeza-Kashesya *et al.*, 2010:7; Wanyenze *et al.*, 2013:11). Further, Laar and colleagues (2015a:873) observed that higher parity among the women was associated with the decreased desire for children. This agreed with the findings of Kawale *et al.*, (2014:4) that WLHIV who were childless or have not achieved the desired family size were more inclined to desire children. The number of children desired ranged from one to three or more (Finocchiaro-Kessler *et al.*, 2010:1109-1110; Shiferaw *et al.*, 2019:3).

Also, it was found in a qualitative study carried out in Uganda that aside number of surviving children, the sex composition of the children also influenced the decision to have another child (Wanyenze *et al.*, 2013:11). This was confirmed in the quantitative survey in Ethiopia where Shiferaw and colleagues (2019:4) reported that WLHIV who gave birth to children of same-sex ('all girls' or 'all boys') are inclined to fertility intentions to get children of mixed-sex. On the other hand, WLHIV who had had HIV-positive children or lost a child to AIDS were mostly unwilling to have children again due to the trauma associated with the phenomenon (Shiferaw *et al.*, 2019:4). But a few were brave to think of replacement (Kanniappan, 2009:628; Cooper *et al.*, 2007:297). Fertility screening and adequate education on SC are needed on a routine basis for all reproductive-aged WLHIV because parity may or may not influence the desire for another child.

Knowledge of the benefits and protective effects of ART and PMTCT, as well as use, may influence fertility decision making. The same applies to the overall health state of WLHIV. A qualitative study in India revealed that WLHIV who had adequate knowledge of ARVs and PMTCT services were encouraged to consider having a child but others would not, though they also had some knowledge (Kanniappan *et al.*, 2008:629-963). Another study in the UK reported that participants who relinquished their fertility desires on account of HIV diagnosis changed their mind in favour of having children when the impact of ART and PMTCT were reviewed with them (Cliffe *et al.*, 2011:1096).

It is also noted that WLHIV who were on ART and had improved quality of health or gain adequate weight expressed fertility intentions (Nattabi *et al.*, 2009:961-967; Cooper *et al.*, 2007:279) but those with severe symptoms were less likely to have such desires (Cliffe *et al.*, 2011:1096). Cliffe and colleagues (2011:1096) reported that WLHIV with debilitating HIV symptoms (who had

earlier relinquished their fertility intentions on grounds of being HIV-positive) were likely to rescind their decision compared to those who were asymptomatic and relatively healthy – after exploring the impact of ART and PMTCT with them. Thus, though the asymptomatic WLHIV decided to change their fertility decisions (from not wanting children due to being HIV-positive to desiring children), WLHIV who were having severe symptoms were less likely to do so. In consonance, Mbita and colleagues (2019:4-6) reported increasing fertility over a year's period which tripled at the end of the sixth year (from 2008 to 2014) with ART initiation and improved health. Further, they observed a fertility rate that was 1.3 times higher in women on ART than their counterparts who were not.

On the contrary, studies in Gabon and Soweto of South Africa regarding factors influencing fertility intentions among WLHIV did not find knowledge or use of ART as significant to fertility decision-making (Okome -Nkoumou *et al.*, 2015:5; Kaida *et al.*, 2011:354). In the same vein, knowledge of ART and PMTCT services was not a fertility intention determining factor among women with perceived HIV risk in Mozambique (Hayford *et al.*, 2012:9). Women living with HIV's parity lone may or may not influence her desire to have a child. Therefore, the prohibitory attitude of providers which dissuade WLHIV who already have children (Matthews *et al.*, 2014:3) need to give way to reproductive health education that favours their reproductive goals.

Other unpopular yet mentioned factors that were also found to be associated with fertility decision-making included race (ethnicity), level of formal education, place of residence, income level, contraceptive method uses, male partner's HIV status and duration of HIV diagnosis (Shiferaw *et al.*, 2019:6; 2009:S43; Kawale *et al.*, 2014:4; Kennedy *et al.*, 2013:780; Cooper *et al.*, 2009:S43).

Kennedy *et al.*, (2013:780) noted that WLHIV of African ethnicity showed the highest odd of

desiring motherhood (OR 9.2 (3.2-26.3) $p < 0.0001$) at 95% CI in consonance with Cooper and colleagues (2007:275) that some societies tend to value children more than others. Relating the association between place of residence and fertility intention, Cooper and colleagues (2009:S42) also noted that living in shacks or informal settings was associated with fertility intention in South Africa but a study that tested such association in Ghana found it not significant (Laar *et al.*, 2015:873). Women living with HIV who were unable to read and write were found to be more inclined towards having children as compared to their counterparts who were university graduates. Also, the authors observed that the odds of having fertility desire was higher among WLHIV with higher income (Shiferaw *et al.*, 2019:6).

While these authors found that women who were unable to read and write had more desire to have children compared to those who are university graduates, Kawale *et al.*, (2014:4) and colleagues reported conversely from a study conducted in Malawi that investigated factors associated with the desire for a child. They noted that primary or higher-level education was not associated with fertility intention among WLHIV. The influencing factors of fertility decision vary greatly in number and combination in different contexts and timelines making identification and sorting out women who need information for reproduction difficult without an appropriate conversation to screen for them. As these women shy away from approaching professionals for such discussions, provider-initiated communication is necessary to reach out to them (West *et al.*, 2016:7).

2.6.3 Factors mitigating fertility desire among WLHIV

Factors that mitigate fertility desire among WLHIV range from personal fears and internalised stigma to problematic attitude of HIV-care providers and society (Matthews *et al.*, 2017:4; Bujan

and Pasquier, 2016:919). Bujan and Pasquier (2016:919) pointed out that in the first two decades of the HIV epidemic, the debate in the medical community regarding procreation among WLHIV was due to the adverse outcomes. These included vertical and horizontal infection, poor maternal outcomes and children becoming orphans. Aside the debate (of whether or not WLHIV should have children), poor attitude and behaviours of healthcare professionals have also been reported (UNAIDS, 2020c:13; Orza, 2017:31). Women living with HIV reported being denied PMTCT services, coercion into sterilization, being told not to have children and other related discriminatory attitudes and behaviours from healthcare professionals (UNAIDS, 2020b:20; UNAIDS, 2020c:13; Orza, 2017:31). Yet again, others also narrated sterilisation under false pretext which has rendered them incapable of ever exercising their reproductive rights (Strode *et al.*, 2012:65; International Community of Women Living with HIV, 2015).

Some WLHIV narrated how they were mistreated during antenatal and postpartum periods because of their HIV status (Orza, 2017:31; MacCarthy *et al.*, 2012:123; Strode *et al.*, 2012:65; Nattabi *et al.*, 2009:962; International Community of Women Living with HIV, 2015) hence, they do not entertain the idea of having children. Others reported anticipated negative reactions and derogatory remarks from healthcare professional should they bring up issues on reproduction (Kawale *et al.*, 2014:4; van Zyl, 2013:105; Orza, 2017:31). This deters some WLHIV from childbearing. Those WLHIV who braved the situation to desire biological children preferred to seek advice from a friend or a family member rather than a healthcare professional on childbearing in Malawi (Kawale *et al.*, 2014:4). Thus, stigma and discrimination from both the society and the health system tend to deter some WLHIV from entertaining fertility intentions or to discuss with their providers when they entertain the idea (Cooper *et al.*, 2009:S44).

Further, Ingram and Hutchinson (2000:122) noted that society which labels women who do not express motherhood by having biological children also deems WLHIV unworthy of pregnancy and childbirth because they are ‘tainted’ with HIV. This, the authors explained, creates what is termed a “double bind” for the women; a situation whereby the very powers that be (society) forbids them against childlessness but simultaneously precludes them from experiencing motherhood because of their HIV status (Ingram and Hutchinson, 2000:122). The authors argue that this double-injunction message engenders strong emotions in WLHIV and influence their fertility decision-making negatively (Ingram and Hutchinson, 2000:122). This countervailing phenomenon was also documented in South Africa and Nigeria (Cooper *et al.*, 2007:278-279; Iiyasu *et al.*, 2017:323). SC education and stigma reduction interventions can help WLHIV exercise their reproductive rights and also alleviate the emotions associated with the double bind. The fear of health deterioration with pregnancy was also found to deter childbearing desires in some WLHIV (Cooper *et al.*, 2009:S43) as well as fear of having an HIV-positive child and issues of orphaning (Cooper *et al.*, 2007:297). This notwithstanding, it was also mentioned that some WLHIV desire biological children to cover up their HIV status in their communities (Cooper *et al.*, 2007:278; Nattabi *et al.*, 2009:962).

Women living with HIV want to have biological children. Repeat pregnancies and deliveries are also established among them (Kaida *et al.*, 2013:4). This makes contraception only education fall short of meeting their need, hence, an unmet need for SC exists (Matthews *et al.*, 2017:3). The many diverse contexts surrounding fertility desires and intentions among WLHIV mediated by the myriad of influencing factors, which do not follow any established pattern, make it difficult to do targeted counselling and education on SC. Continual and effective HCW-initiated communication

is necessary to identify WLHIV with fertility intentions (Cooper *et al.*, 2007:282; Bujan and Pasqueir, 2016:922). Besides, the HIV continuum of care should have available services that enable persons living with HIV to achieve their reproductive goals safely as and when they desire. Thus, for those who want to have biological children, SC education and other related services should be available to enable them to do so without transmitting HIV to their partners and children. This will be in tandem with the basic tenets of reproductive health (UNFPA, 2004:45-46) and the emerging programmes on SC (WHO, 2015:48; Davies *et al.*, 2018:1). But HIV-care provider training is necessary to overcome some of the major implementation challenges; viz: poor knowledge, attitude and skills on the subject (Brown *et al.*, 2016:2; Matthews *et al.*, 2017:4).

2.6.4 WLHIV's desire for biological children

In Africa, procreation is prioritised above many other reasons for marriage. Hence childlessness can be the basis for its dissolution (Ebun, 2014:96; Idang, 2018:109). Though it takes a couple to have children, the brunt of childlessness is heavier on women. Kimathi (1994:82 as cited by Balon, 2017:2), noted that a “woman’s glory is crowned in childbirth”. Childbearing is a means of proving one’s womanhood and identity among women in the African culture. More so, Balen and Bos, (2009:116) gathered from a review and analysis of 39 studies regarding the social and cultural effects childlessness that women in this situation are open to many forms of gender-based violence and maltreatments of various degrees. These include beatings, being given a rival (polygamy), harassment from in-laws, divorce, ostracism and isolations, and other unfavourable treatments.

Childlessness renders a woman abnormal and worthless in her society. It attracts a social stigma and discrimination. In effect, childless women suffer depression, anxiety, self-worthlessness,

lowered self-esteem, feelings of guilt and shame (Dyer, 2005:1940; Obajimi, *et al.*, 2019:195). As summed up by Awolalu and Adelumo (1979:172 cited by Egun, 2014:96), "...Unfruitful marriage is not only a misfortune but a curse since the couple have not contributed to the community of the family and therefore, of the society. A barren woman, however rich, famous or successful, is a shame to her race". These circumstances surrounding childlessness force women to go to great lengths to have biological children disregarding the consequences. Van Zyl (2013:127) in a doctoral thesis conducted in South Africa titled 'Reproductive needs of men and women living with HIV: implications for family planning counselling' found that WLHIV face a similar situation if they do not reproduce. In addition, the childless WLHIV face the challenges of the double bind and compound stigma (from childlessness and being HIV positive) as pointed out in this excerpt from a WLHIV in Uganda: "... *Imagine a situation where you have a man who is taking care of you but you have not produced with him. To keep the relationship going and strong, I will be forced to produce so that I do not lose the man.*" (Wanyenze *et al.*, 2013:5).

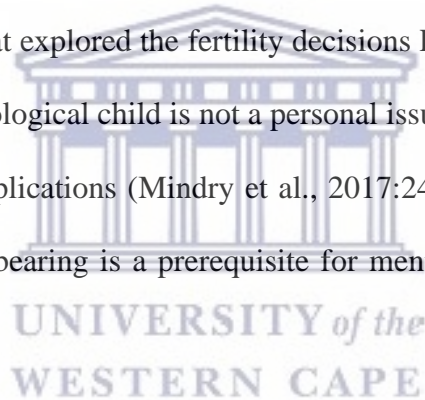
As discussed, these cultural pressures alongside the desire for self-fulfilment drive WLHIV to disregard the rather prevalent preventive medical advice on condom use (which is contrary to childbearing) and brave the HIV transmission risk to attempt pregnancy their partners' seroconversion (Ngure *et al.*, 1587; Tang *et al.*, 2016:5). The high number of women requiring prevention of mother-to-child transmission of HIV services each year in the 21 priority African countries, - an estimated 1.2 million in 2015 - (WHO, 2016c:32) is also suggestive of the magnitude of childbearing intentions among WLHIV.

Considering the ever-increasing population of reproductive-aged WLHIV and increasing serodiscordancy, there is the need for the right mix of specific prevention packages tailored to their

needs. The SC that helps them negotiate the HIV transmission risk safely while attempting pregnancy in the quest to have their biological children is very critical in reducing transmission to their partners (Matthews *et al.*, 2018:2) as serodiscordant partners are a priority population for aggressive implementing of HIV preventive intervention because of the high risk of HIV seroconversion (Bishop and Foreit, 2010:10; Dunkle *et al.*, 2008:2187-2188).

2.6.5 To have or not to have: the health aspects of childbearing in WLHIV

“If a person passes on without a child, you are taken as a person who has lived a meaningless life. In Buganda, it is like a taboo.” These were the words of an adolescent living with HIV from Uganda in a qualitative study that explored the fertility decisions PLHIV (Wanyenze, 2013:5). In SSA, to have or not to have a biological child is not a personal issue only, it has sociocultural and historical underpinnings and implications (Mindry *et al.*, 2017:2491; Wanyenze *et al.*, 2013:11; Cooper *et al.*, 2009:S44). Childbearing is a prerequisite for mental health and social wellbeing (Dyer *et al.*, 2005:1942).



Health is a resource for life. It is a state of sufficiency that is fundamental for living a quality and productive life. It is defined as a state of physical, mental and social wellbeing of an individual and not merely the absence of disease or infirmity (WHO, 1998:1). This definition by the WHO identifies mental and social wellbeing, aside from physical wellbeing, as core dimensions of health. Mental health is “... the successful performance of mental function, resulting in productive activities, fulfilling relationships with people, and the ability to adapt to change and to cope with adversity” (U. S. Department of Health and Human Services, 2001:7). Social wellbeing, on the other hand, refers to one’s ability to make and maintain positive and meaningful interaction with others regularly.

According to Keyes (2002:208), social wellbeing has five dimensions: social coherence, social actualization, social integration, social acceptance and social contribution (the belief that one is important in society and has a quota to contribute to its sustenance). The author argued that social wellbeing is suggestive of an individual's mental health. This is because a mentally healthy person engages in productive activities and fulfilling relationships which are some of the dimensions of social wellbeing. Thus, social wellbeing and mental health are interconnected. In SSA, a woman's social and mental wellbeing is partly associated with her ability to reproduce for that matter motherhood; through it, she is accepted to have contributed to social perpetuity. She feels fulfilled and integrated (Fathalla, 2012:8).

Motherhood, in its simple term, implies bearing and rearing a child. It has both personal, cultural and historical perspectives (Ingram and Hutchinson, 2000:118; Kennedy *et al.*, 2013:777). In an analysis of (motherhood from the perspectives of) African literature and culture, Akujobi (2011:3-4) observed that childbearing defines a woman in society. It is observed from other Sub-Saharan African countries that childbearing is a prerequisite for social acceptance. Part of her contribution to society is achieved through giving birth to children who play very crucial roles in society. These roles include continuity of the lineage and its name, helping hands, security in marriage and against old age among others. Hence a childless woman is considered incomplete; a failure to herself and society and discriminated against. A childless woman experiences rejection and low self-esteem (Akujobi, 2011:3 – 4; Tabong and Adongo, 2013:4).

In exploring perceptions of childbearing and childlessness in northern Ghana, Tabong and Adongo (2013:4) reported similar findings. They also observed that having children bestows prestige - even in death. Thus, a childless person, especially women, are not given a befitting burial ceremony,

but funeral rites similar to that of a child (Tabong *et al.*, 2013:4). Childbearing is therefore highly desired in African society especially among women (Dyer, 2007:71; Dyer 2005:1940; Dyer 2002:1666;). Similar to Ghana, it is also observed in Tanzania that having biological children is so valued to the extent that there is no worse off situation for a woman than being without a biological child (Akujobi, 2011:3; Hollos and Larsen, 2008:167).

Many authors observed similar findings in WLHIV who have or desire to have children – they want to maintain their identity as women, secure their marriages, experience motherhood, ensure continuity of their lineages and family name, avoid stigma and discrimination associated with childlessness among others (Natabbi *et al.*, 2009; Rhodes *et al.*, 2017:4; Finocchiaro-Kessler *et al.*, 2010:1111). Kennedy *et al.*, (2013:780) reported that 91% of the 497 WLHIV in their study agreed that motherhood was important to them. Out of the number of women who adore motherhood, 93% expressed that they would derive fulfilment from caring for children. In a qualitative study that interviewed participants (both male and female living with HIV with recent referent pregnancy) in South Africa, it was noted that some of the participants wanted to have children because they anticipate imminent death and as such expressed urgency for having biological children before death while others think they (children) will bring back the fervour of life as portrayed in this excerpt:

“I think [it is important for a man to have children] because children are a gift from God. They leave a legacy of the family and they extend and expand your surname so that it won't die when you die, your legacy won't perish”. (Man 28 years with HIV – partner) (Matthews et al., 2011:463).

Thus, WLHIV have children or desire to do so for both mental and social wellbeing which contribute to their overall health according to WHO (1998:1).

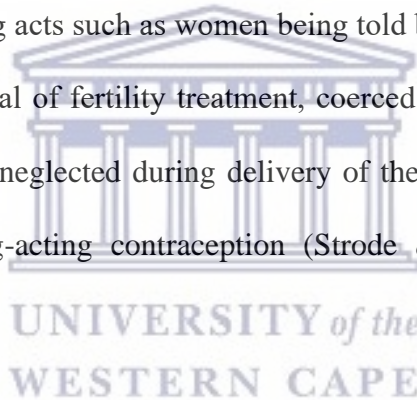
2.6.6 Childbearing among women in the context of HIV

As outlined earlier, Bujan and Pasquier (2016:919) and Chadwick *et al.* (2011:148) in their literature review on people living with HIV and reproduction, narrated that whether or not WLHIV should have children was seen from two perspectives in the medical world. One perspective presents that WLHIV have a human right to have children and should be helped to so. On the other hand, others think it is malfeasance on their part to risk HIV transmission for a right to procreate. Thus, on ethical grounds, this school of thought believed WLHIV should not be allowed to have children because of the inherent risk of both vertical and horizontal HIV transmission to the baby and the partner respectively. Besides, the deterioration of maternal health and death may lead to orphaning coupled with poor paediatric outcomes on HIV infected babies made the effort unattractive. On account of these adverse outcomes, healthcare professionals may feel they have a moral obligation to prevent both the vertical and the horizontal transmission hence advised that WLHIV should not have children. Those who attempted were labelled cruel and irresponsible (van Zyl, 2013:68).

Thus, though it is believed that every woman, including WLHIV, has the right to exercise their reproductive right, the untoward outcomes associated with the process among WLHIV created a dilemma for society including both WLHIV and the medical community. In the face of this, one of the identified circumstances that have plagued WLHIV who expressed the desire or intention

to reproduce was pregnant or had a child over the years was stigma and subsequently, discrimination which varied in degree from place to place.

Literature reported various acts of stigmatization and discrimination suffered by WLHIV regarding reproduction especially in the early days on the disease. Bujan and Pasquier (2016:191) noted that during that dark period of the disease when no treatment was available (the 1980s to early 1990s), WLHIV were discouraged from attempting conception. The CDC and the American College of Obstetrics and Gynaecology recommended that WLHIV should not become pregnant (CDC, 1985:722). Those pregnant were asked to consider termination and consider adopting a child. In some other settings, discouraging acts such as women being told bluntly that they “no longer had the right to have children”; denial of fertility treatment, coerced abortion and sterilization were reported. Others reported being neglected during delivery of their babies and being forced into uptake or continuation of long-acting contraception (Strode *et al.*, 2012:63; Orza 2015:4; Salamander Trust, 2014:11).



Even in such dispensations, WLHIV sought help to have biological children braving both the vertical and horizontal HIV transmission risk (Bujan and Pasquier, 2016:191). Such was the state of affairs regarding childbearing among WLHIV in most countries until the advent of the highly active antiretroviral therapy in 1994 which revolutionised HIV care (Bujan and Pasquier, 2016:191). With treatment with antiretroviral drugs, quality of life is improved and there is a reduced risk of HIV transmission. In the late 1900 and early 2000s, issues of reproduction among PLHIV had started receiving much attention and legal restrictions were becoming loose especially in the developed nations. Both natural and artificial reproduction services were being rendered to PLHIV.

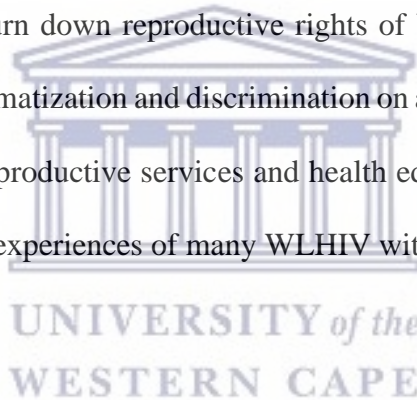
Women living with HIV in the developed countries like in Europe (especially the United Kingdom, Italy) and some part of the Americas were at an advantage compared with their counterparts in the developing world regarding access to ART and assistance with assisted reproduction and natural conception methods which produced many study findings on the outcomes of these measures to prevent either horizontal or vertical HIV transmission and acquisition or both (Semprini *et al.*, 2013:42e5; Semprini, 1992:1317; Semprini *et al.*, 1997:1402; Mandelbrot *et al.*, 1997:851; Frodsham *et al.*, 2006:288; Barreiro *et al.*, 2006:325; Bujan, Sergerie *et al.*, 2007:79; Sauer, 2005:137; Gilling-Smith, 2006:304). This is because SC strategies and policies guiding their implementation were made available (Mmeje *et al.*, 2014:82; Gilling-Smith, 2006:304; ASRM, 2004:230). Thus, WLHIV were assisted to manoeuvre the inherent risk of horizontal HIV transmission and acquisition. This assistance was either through artificial reproductive treatment (Sauer, 2005:137) or natural (Mandelbrot *et al.*, 1997:851).

In the case of the former, artificial insemination was carried out which forestalls unprotected sexual intercourse. Otherwise, with highly active antiretroviral therapy and a combination of other preventive measures in HIV management (condom use, timing unprotected sexual intercourse to the peak of fertility) for natural conception, WLHIV were helped to conceive with minimal risk of infecting their partners (Barreiro *et al.*, 2006:325; Mandelbrot *et al.*, 1997:851; Gilling-Smith, 2006:304).

However, before the year 2000, few facilities were providing a full range of such care as is necessary to meet the reproduction needs of WLHIV even in the developed countries and the numbers are increasing (Sauer, 2006:295; ASRM, 2015:5). In the developing countries, fewer national policies (in South Africa, Kenya, Uganda and Botswana) recognised and offer these

services as part of HIV care according to their guidelines (Davies *et al.*, 2018:1). As Matthews *et al.*, (2017a:4) rightly noted in their consensus statement, though there is demand for SC services, access is limited by many contextual factors such as inadequate HCW knowledge and skills, poor attitude, unavailability of guidelines among others.

With the advances in HIV management and prevention, there are enough preventive interventions to fight HIV/AIDS which can be applied in childbearing among WLHIV (Eisinger *et al.*, 2019:2-3). On account of the existence of these proven measures that could be used to minimise the inherent risk of HIV transmission and acquisition, Bujan and Pasquier (2016:922) argue that there is currently no justification to turn down reproductive rights of WLHIV. This notwithstanding, studies continue to show that stigmatization and discrimination on account of expression of fertility intention or desires; denial of reproductive services and health education void of information on SC continues to be the common experiences of many WLHIV with fertility desires and intentions (Matthews *et al.*, 2017:3).



2.7 HIV PREVENTION AND REPRODUCTIVE HEALTH

The HIV response, currently, is mainly two-pronged: for prevention of infection in uninfected population and treatment of the disease condition in persons living with HIV with the ultimate goal of preventing new HIV infections, and minimising AIDS-related morbidity and mortality (Piot *et al.*, 2015:183; UNAIDS, 2015b:4). Apart from the retrovirus as the direct cause; socio-cultural, political, economic and environmental factors influence HIV risk, its transmission and acquisition (Gupta *et al.*, 2008:764), the HIV response is multi-faceted (Piot *et al.*, 2015:174).

2.7.1 HIV prevention interventions

Interventions for HIV response may be behavioural, biomedical or structural strategies, geared towards changing the identified factors that put people at risk of HIV infection or facilitate HIV transmission (Piot *et al.*, 2015:171). They may be affected at the individual, couple, community or national levels to moderate attitude and behaviours and impact the identified and needed skills (Gupta *et al.*, 2008:764).

The behavioural approach consists of strategies that reduce the risk of transmission and acquisition of HIV such as decreasing the number of sexual partners, increasing the number of sexual acts that are protected, and encouraging adherence to biomedical strategies preventing HIV transmission (Avert, 2019; Coates *et al.*, 2008:2). Behavioural strategies to accomplish these goals can focus on individuals, couples, families, peer groups or networks, institutions, and entire communities. On the other hand, structural HIV prevention strategies are directed at modifying context factors within which HIV transmission and acquisition occur in a given society. Sumartojo *et al.*, (2000:S1) and Piot *et al.*, (2015:172) noted some of the contextual factors that include physical, social, cultural, organizational, community, economic, legal actions or policies that may influence positively or negatively, people's efforts to avoid HIV infection.

Changes in laws and policies, provider practices and funding address some structural factors (Sumartojo *et al.*, 2000:1). Thus, a structural approach to HIV prevention entails modifying these contextual factors to be protective of uninfected persons and be unfavourable to HIV transmission as well as acquisition. Programmes that are tailored towards reducing gender-based violence and

improving social protection for WLHIV are examples of structural HIV response strategies (Gupta *et al.*, 2008:764; Piot *et al.*, 2015:172).

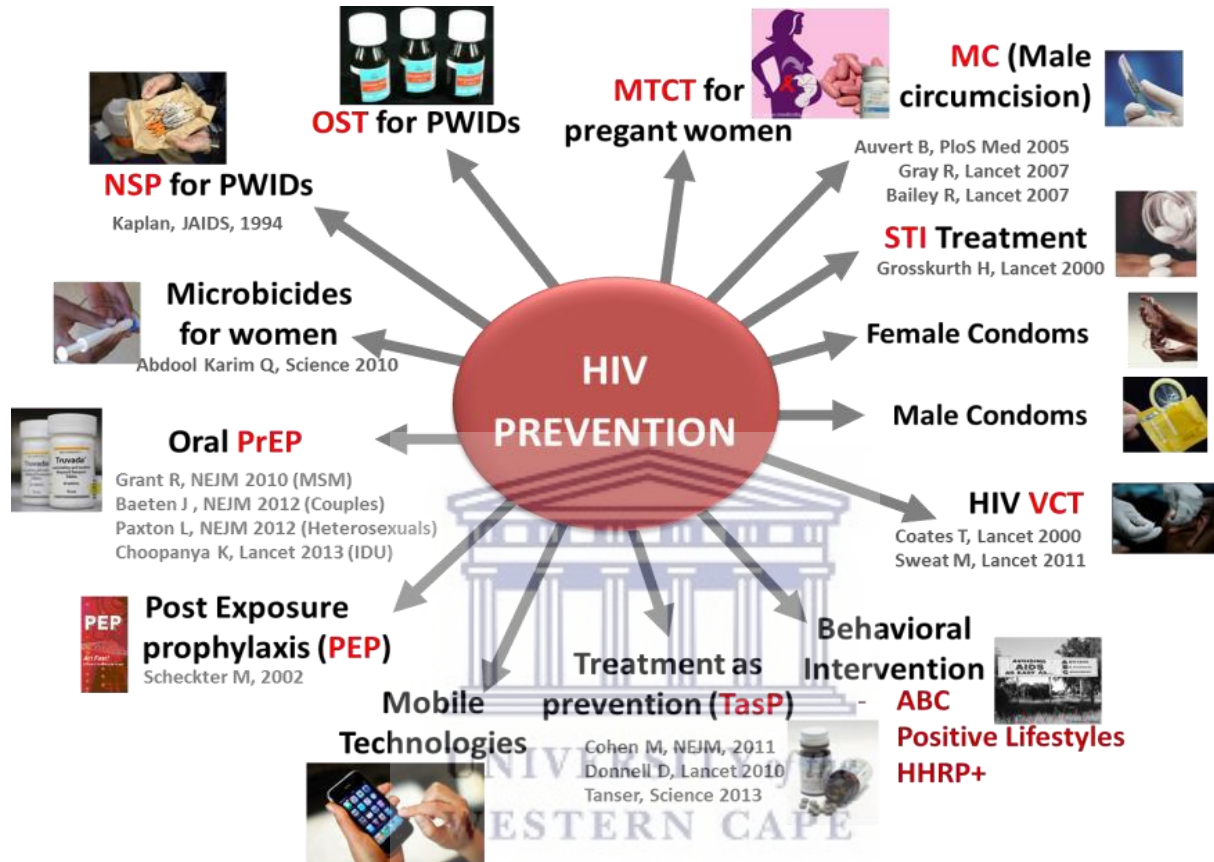


Figure 2-1: Some HIV prevention interventions. Source: International AIDS Society (2014:20).

ABC- abstain, be faithful, use a condom; HHRP+ - holistic harm reduction programme; MC – male circumcision; MTCT-mother to child transmission; NSP – needle and syringe programme; OST – opioid substitution therapy; PEP – post-exposure prophylaxis; PrEP – pre-exposure prophylaxis; STI – sexually transmitted infection; TaSP – treatment as prevention; VCT – voluntary counselling and testing.

Biomedical preventive strategies work at the level of blocking or decreasing infectiousness of HIV by reducing exposure and/or transmission of HIV. Antiretroviral therapy, voluntary medical male circumcision, treatment of sexually transmitted infections (STIs), are some of the interventions

under this preventive category (UNAIDS, 2010:23; UNAIDS, 2015b:14). With nearly forty years of advancement in the fight against the HIV epidemic (as of 2021), many proven interventions have been developed for the prevention and treatment of HIV infection. However, there is no single strategy that is a hundred per cent effective. This has, therefore, necessitated the combination of strategies for synergy and effectiveness (Piot *et al.*, 2015:171) (see Figure 2-1).

2.7.2 Combination prevention programmes for reproductive health

Combining HIV preventive interventions into tailored programmes increase their impact on the specific populations they are designed for (UNAIDS, 2020b:11). Combining interventions into programmes (as a response strategy) therefore requires that the dynamics of the epidemic in the population in reference are known and critically appraised. Knowing the local epidemic implies knowing the population that are most impacted, those most at risk and the drivers of the HIV infection among them. It also requires knowledge of the available preventive interventions and how they can be garnered to address the risks bearing in mind the context of the operation. In the process of developing the programme, the evidence basis of their efficacy, potential synergies (of the individual elements) and the delivery feasibility need to be considered. It is based on the assessed risk profile of an identified population (Celum *et al.*, 2012:1; Jones *et al.*, 2014:272).

Instead of using preventive interventions singly as it was for the initial HIV response with ABC - abstinence, be faithful and condom – which are behavioural strategies, a combination of the behavioural, biomedical and structural strategies is applied for an identified population in a setting (see Figure 2-2). An example of a combination reproductive health programme is the PMTCT (Jones *et al.*, 2014:273).

Effective HIV prevention programmes require a combination of behavioural, biomedical and structural interventions



Figure 2-2: HIV combination prevention model. Source: Avert (2019:2).

Reproductive care in HIV, as entailed in the PMTCT programme, is four-pronged. It includes (1) primary prevention of HIV infection in young people and women of childbearing age; (2) preventing unwanted pregnancy among WLHIV; (3) preventing transmission of HIV from an infected WLHIV to her infant and (4) provision of support for WLHIV, their children and families (WHO, 2010:6). The range of services provided under the programme makes room for WLHIV who do not desire to have children to adopt family planning (under prong 2). However, those who desire to have children do not usually have their needs for SC expressly captured and hence receives relatively little attention (Finocchiaro-Kessler *et al.*, 2014:15; Schwartz *et al.*, 2015:34).

However, should WLHIV become pregnant, there are elaborate routine services to prevent HIV transmission to their infants and keep mothers' healthy (under prong 3) through antenatal, intrapartum as well as postpartum/postnatal periods (Mmeje, Njoroge *et al.*, 2015:156; WHO, 2010:6). In a letter to the editor, Mmeje, Njoroge *et al.*, (2015:156) asserted that SC strategies should be added to the armamentarium of preventive measures that are available routinely for

reproductive healthcare to make it comprehensive – thus catering for all reproductive needs of WLHIV. The authors opined that assisting WLHIV to attempt conception safely should have been expressly captured in the third prong (prevention of HIV transmission from mother to child) of the existing WHO PMTCT structure and thus, creating a complete reproductive option available (as shown in Figure 2-3). It is anticipated that this merging of SC into PMTCT would also contribute to the elimination of mother-to-child-transmission (eMTCT) as well as facilitate the involvement of men (who are major fertility decision-makers in partnerships) in reproductive healthcare (Mmeje, Njoroge *et al.*, 2015:157; Matthews *et al.*, 2014:216).

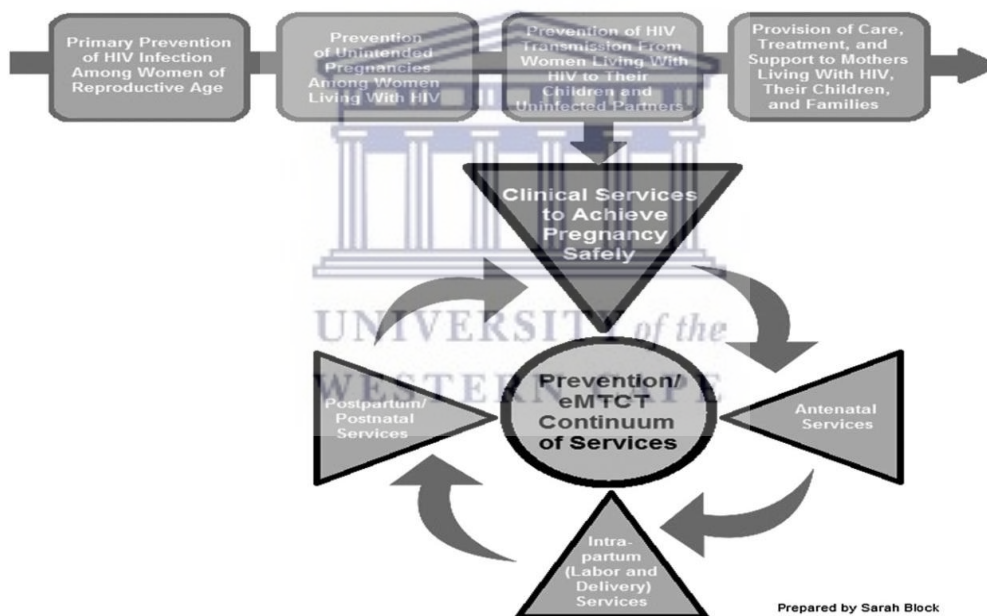


Figure 2-3: Redefining the WHO prevention/eMTCT strategy. *Source: Mmeje et al., (2015:156).*

2.7.3 Reproduction in the context of HIV prevention

Women living with HIV, who desire to have their biological children may be in serodiscordant or seroconcordant relationships. A serodiscordant relationship refers to an intimate partnership in

which one person is HIV-positive but the other is uninfected. On the other hand, when both partners are HIV positive, then they are in seroconcordant relationships (Muessig *et al.*, 2014:2; Schwartz, *et al.*, 2017:45). Though there is no risk of seroconversion in the latter relationship, there is the risk of reinfection and drug-resistant viral strains may be transmitted vertically as well as horizontally (Gilling-Smith *et al.*, 2006:869). Reinfection may be either coinfection – a dual infection that occurs before the immune response is generated for the first HIV strain that entered the body – or superinfection a dual infection in which immune response is established for the first strain before the second is also contracted. Either way, reinfection has poor outcomes (low CD4⁺ T-cell counts, higher viral loads, resistant strains) thereby pose a threat to HIV response because they are counterproductive to the prevention of new HIV infections (Vesa *et al.*, 2017:2).

In discordant relationships where biological children are desired, the partners are willing to risk infecting the uninfected partner to conceive (Brubaker *et al.*, 2011; Snow *et al.*, 2013; de Walque and Kline, 2012). It is also known that in this relationship where pregnancy occurs, the risk of HIV transmission and acquisition doubles for the uninfected partner compared to similar relationships where pregnancy does not occur (Bubaker *et al.*, 2011). On account of these, desires cannot be ignored in the face of leveraging attempts to reduce new HIV infections (Mmeje *et al.*, 2015:157; Matthews *et al.*, 2017:9).

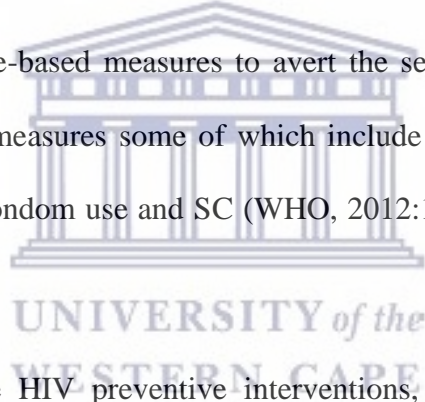
Thus, serodiscordant relationships are important in the HIV response in SSA because they contribute significantly to the burden of disease through the seroconversion of the uninfected partner. It constitutes a significant proportion of stable spousal or cohabiting partnerships. A survey of 20 countries from the SSA region estimated stable heterosexual partnerships to be between 35.5% to 76.6% of the population; of these, serodiscordant relationships ranged between

36.3% to 87.8% (which is a proportion of the estimated number of the stable partnerships) (Chemaitelly *et al.*, 2012:55). Thus, considering that three-quarters of reproductive-aged adults (20-49 years) in SSA report stable heterosexual relationships (WHO, 2012:6) the proportionate serodiscordant relationship among this population is significant. It is estimated that every year, “close to two-thirds” of the total new HIV infections occur in the context of heterosexual partnerships which maybe marriage or cohabitation in SSA (Chemaitelly *et al.*, 2014:10). These observations also show that there is wide variability in the proportion of stable partnerships and also the serodiscordant partnerships from one country to another.

The proportion of serodiscordancy is also influenced by the nature of the epidemics in the country; whether concentrated or generalised. In eastern and southern Africa, surveys indicated that over half of couples affected by HIV were in serodiscordant relationships with the prevalence (of discordant relationships) estimated at 30-85% (Guthrie *et al.*, 2007:416; Lingappa *et al.*, 2008:2; Steiner *et al.*, 2016:107). And though averagely, an annual contribution of serodiscordance to new HIV infections is estimated to be 29.7% (Chemaitelly *et al.*, 2014:6), it is also observed that there is much variability regarding the degree of new HIV infections attributable to serodiscordant partners in different countries due to differences in epidemic profile. New HIV infections from serodiscordance were 87% in Zambia but 64% in 14 countries in southern and eastern African countries (WHO, 2012:7). It is also documented that in these serodiscordant partnerships, half of the infected partners were females while the other half were males (WHO, 2012:6).

Contrary to the previously held opinion that it was the males who were infecting the females in serodiscordant partnerships, Chemaitelly and colleagues (2012:55-56) found that women are equally likely to infect their male counterparts as females are the infected index partners in 49.4%

of serodiscordant relationships. Thus, serodiscordant partnerships (whether with a male or female as an index partner) pose HIV risk (Chemaitelly *et al.*, 2012:56). In the wake of zero new infections vision to achieve the 2030 agenda of eliminating HIV as a public health problem (UNAIDS, 2020a:15), such quota of new HIV infections cannot be overlooked. Given these estimates that serodiscordant partners contribute to new HIV infections, the phenomenon which has attracted attention for HIV response and evidence-based interventions has been put in place at both the individual and couple levels to address the situation (WHO, 2012:1). As the main mode of transmission is condomless heterosexual intercourse (Fettig *et al.*, 2014:2; GAC, 2016:28), both HIV-care providers and the partners in serodiscordant relationships need to work together in implementing accepted evidence-based measures to avert the seroconversions (WHO, 2012:7) employing the evidence-based measures some of which include frequent HIV counselling and testing; antiretroviral therapy, condom use and SC (WHO, 2012:1; Chemaitelly *et al.*, 2014:10; Matthews *et al.*, 2012:6).



To adopt and implement these HIV preventive interventions, these stakeholders (HIV-care providers and PLHIV) need to understand serodiscordance, appraise and appreciate the HIV risk and then play their respective roles to avert seroconversions of the uninfected partner (Matthews *et al.*, 2012:6). However, most persons in serodiscordant relationships are unaware of their partners' HIV status. Likewise, uninfected persons in serodiscordant relationships are usually not aware of their status, and as such, their vulnerability to infection to make informed decisions and adopt preventive measures (WHO, 2012:6-7; Matthews *et al.*, 2014:3).

A study in South Africa among both men and women living with HIV revealed that a sizeable population of pregnant WLHIV as well as men living with HIV (MLHIV) (with pregnant partners)

were not aware of their partner's HIV status (Matthews *et al.*, 2014:3). Similarly, Schwartz *et al.*, (2017:45) also reported that 17% of the WLHIV who were enrolled on the SC clinic in Johannesburg were ignorant of their partner's HIV status. In a related study Steiner *et al.*, (2016:107) observed that of the 831 participants (WLHIV) in South Africa, 25.3% were in serodiscordant relationships, 39.7% were seroconcordant while 35.0% did not know their partner's status. This creates a gap in the adoption and practice of risk reduction strategies for HIV prevention (Matthews *et al.*, 2012:6) because people are motivated to take action to protect themselves if they are aware of their serodiscordance state and have an understanding of their vulnerability to HIV transmission and acquisition (Matthews *et al.*, 2014:2).

Further, the dynamics of serodiscordance are poorly understood among both HCWs and PLHIV (WHO, 2012:7; Matthews *et al.*, 2014:212). Regarding the situation of PLHIV, a study that explored the reproductive decision-making and horizontal HIV transmission risk understanding and practices among serodiscordant couples (with either the male or female as the index partners), noted that the participants expressed confusion about the uninfected counterpart remaining negative while sexually active with a positive partner (Matthews *et al.*, 2013:465). The authors further noted pessimism in which the participants assumed seroconcordancy and therefore the likelihood of lowering protective measures in favour of risky sexual behaviours as is quoted in the following excerpt by an HIV positive female with a negative partner (Matthews *et al.*, 2013:465):

“We didn't have a problem [to use condom] at the beginning, but over time, he stopped using them saying “if I am positive, he is also positive’. He can't be negative while I am positive: maybe the virus is hidden but it is there.”

Poor risk perception was also reported to account for condomless sexual intercourse (Mmeje, van der Poel *et al.*, 2015:3). A qualitative study that reported seroconversion among serodiscordant couples in Kenya noted that though the partners in the study recognised the risk of infection, they either underestimated it or counted on divine protection hence lowered their protective mechanisms especially using of condoms (Ngure *et al.*, 2016:1587). In a related development, the WLHIV knew that her partner could be infected but dared the risk while praying against infecting him.

The assumption of seroconcordance is not limited to only PLHIV clientele; it was also reported among HIV-care providers. An interview of HIV-care providers in South Africa that explored SC knowledge and clinical practices found that the participants doubt that an uninfected partner who is sexually active in a serodiscordant relationship could remain HIV negative. With this erroneous understanding, their reproductive services to WLHIV focused more on perinatal HIV risk prevention rather than horizontal transmission (Matthews *et al.*, 2014:213). These study findings among both HCWs and WLHIV underscores HIV-care provider training and clientele education on serodiscordance and HIV prevention in the uninfected partners especially in the context of attempting conception (WHO, 2012:35).

2.7.4 Safe conception as an HIV response programme

Interventions that are organised and implemented to avert HIV transmission and acquisition are termed HIV prevention programmes. These interventions may be for individuals, couples, communities or passed out as public health policies (Avert, 2019:1). Safe conception is a combination HIV preventive programme with components from the behavioural, biomedical and

structural HIV prevention interventions. It is tailored for heterosexual serodiscordant/seroconcordant couples who have fertility intentions (Schwartz *et al.*, 2014:279).

It is made of several components termed SC strategies such as ART for viral suppression, timed unprotected sexual intercourse (TUI), timed vaginal self-insemination (TVI), PrEP, treatment of STIs, voluntary male medical circumcision and artificial reproduction (Matthews *et al.*, 2012:2). Celum and colleagues (2013:2) stated that a good HIV preventive programme should have synergy – the effect of the various components of the programme directed at the different risk factors and paths of HIV transmission identified in the population should amount to the sum of its parts or greater. The components of SC are such that some reduce the infectivity of the index partner while others reduce susceptibility in the uninfected partner (Schwartz *et al.*, 2014:279-280).

It is expected that the effects of the different components (based on the informed preferences of the partner(s), would strengthen each other, a synergy that would act to reduce the risk of infection (Celum *et al.*, 2013:1; Alsallaq, *et al.*, 2013:8). For instance, Alsallaq and colleagues demonstrated through mathematical modelling, that a programme of HIV preventive interventions (HIV testing, medical male circumcision, early ART initiation and ART use) could pull a synergy that reduces new HIV infections by 47% in 4 years with a cumulative effect of about 60% reduction in 25 years in a population (Alsallaq, *et al.*, 2013:1). The SC programme is tailored following this concept. Its main goal is primary prevention (preventing seroconversion of the uninfected serodiscordant partner) which remains the core of the global HIV response (UNAIDS, 2017:17). But it also contributes to secondary and vertical prevention i.e., maternal viral suppression and PMTCT (Saleem *et al.*, 2017:19).

2.7.5 Safe conception as a harm reduction strategy for HIV prevention

Harm reduction refers to strategies that are adopted to limit the negative consequences of a phenomenon such as a drug-use. Harm reduction is associated with drug use (Avert, 2019:1), but the concept has been adopted for HIV prevention. Matthew and Mukherjee (2009:6-7) explained that just like clean syringes and needles were made available to injection-drug -users to minimise the risk of disease transmission among them knowing that they would not stop injecting drugs; so also, PLHIV who desire biological children should be assisted minimise the HIV risk inherent in attempting conception knowing that they would risk HIV transmission to have children in the absence of such measures.

The authors explained that such assistance – ranging from “practical advice” to high technologically sound practices – that are made available to persons in HIV-affected relationships to help them mitigate the inherent HIV risk in attempting pregnancy are harm reduction interventions. They must be based on scientific observations of HIV infectivity. Acknowledging that WLHIV encounter a peculiar challenge of horizontal HIV transmission when they attempt pregnancy and therefore providing such services to meet their childbearing needs while limiting the risk of infection/superinfection in their partners would be a step in the right direction to preventing new HIV infections (Mindry *et al.*, 2013:598; Heffron *et al.*, 2015:1; Mmeje *et al.*, 2014:84; Matthews *et al.*, 2017:9; Schwartz *et al.*, 2017:50). Enough literature abounds that SC strategy can help limit the HIV transmission risk at conception and thereby reduce new HIV infections in partners of PLHIV (Mmeje *et al.*, 2016:2; Matthews and Mukherjee, 2009:7; Davies *et al.*, 2018:9; Ciaranello and Matthews, 2015:1526; Bujan and Pasquier, 2016:921; Shama and Semprini, 2003:186; Barreiro *et al.*, 2006:325; Schwartz *et al.*, 2017:43; Heffron *et al.*, 2015:2).

At the International AIDS Society (IAS) 2017 conference in Paris, the satellite session meeting reported under the caption “Global consensus guidelines on SC research and programming priorities for HIV-affected individuals and couples” indicated that there was a consensus that safer conception strategies minimise the incidence of HIV infections as well as support the biological childbearing goals of WLHIV and their partners (Matthews *et al.*, 2017:2). Evidence also exists of seroconversions that occurred in the absence of the uptake of behavioural and biological HIV preventive strategies (Ngure *et al.*, 2016:1587). Further, evidence exists to the effectiveness of SC strategies in preventing seroconversion in partners of PLHIV who adopted the strategies (Matthews *et al.*, 2017:5; Schwartz *et al.*, 2014:283; Barreiro *et al.* 2006:325).

2.7.6 Safe conception strategies (components of safe conception toolkit)

The techniques are classified as either assisted reproductive techniques or natural SC strategies or “high-technology” and “low-technology” strategies respectively (Fakoya, *et al.*, 2008:689; Chadwick 2011:148; Matthews *et al.*, 2009:7; Davies *et al.*, 2018:26). The former (assisted reproduction) includes artificial insemination whereby sperm washing (SW) is done and then coupled with either intrauterine insemination (IUI), or intracytoplasmic sperm injection (ICSI) (Gilling-Smith, 2006:871; Fakoya, 2008:691; Matthews, 2009:S7; Davies *et al.*, 2018:2). These require high technological assistance and are therefore not only expensive but also less common in developing countries making accessibility difficult. (Stanitis *et al* 2008:1157; Laar *et al.*, 2013:2; Huysen and Boyd, 2013:93; Dyer *et al.*, 2013:2758). However, it is safer compared to natural conception in terms of HIV transmission risk (Bujan *et al.*, 2007:1909; Chadwick *et al.*, 2011:152; Mmeje *et al.*, 2014:81).

Natural conception was recorded among HIV-affected couples in the developed countries with negligible risk of seroconversion – starting as early as three years after (Mandelbrot *et al.*, 1997:850; Barreiro, 2006:234) HIV was officially reported for the first time in 1981 (CDC, 1985:722). Conception methods in this category include timed unprotected intercourse (TUI) - limiting unprotected sexual intercourse to ovulation period only, and timed vaginal self-insemination (TVI) (Fakoya, 2008:691; Mandelbrot, 1997:850; Barreiro, 2006:234; Davies *et al.*, 2018:24). The strategies are coupled with adjuncts or non-conception specific ones which include viral suppression with ART, pre-exposure prophylaxis (PrEP), voluntary male medical circumcision and treatment of sexually transmitted infections (STIs) (Davies *et al.*, 2018:24) for improved safety. Hence, for greater risk reduction, it is recommended that both assisted reproduction and natural conception strategies have antiretroviral therapy for the infected partner(s) for viral suppression. These adjuncts or non-conception specific strategies are selected based on the client's HIV statuses and preferences (Matthews and Mukherjee, 2009:7; Davies *et al.*, 2018:24).

2.7.7 The safe conception toolkit: a closer look at the individual strategies

The components of SC are a combination of biomedical, behavioural and structural HIV prevention interventions (Schwartz *et al.*, 2014:279). The biomedical strategies tend to reduce the chances of HIV transmission in the event of exposure during risky behaviours. They are ART, PrEP, voluntary male medical circumcision and assisted reproduction. The behavioural components are to limit the frequency of unprotected sexual intercourse to the peak time of fertility, ejaculating into a condom for vaginal insemination. These are geared towards the prevention of risky behaviours that expose to HIV infection. Structural changes including

screening for infertility (Schwartz *et al.*, 2014:279). The elements that constitute a SC package for partners differ depending on their serostatus, their choices, clinical considerations, finance and other resources available to them, as illustrated in Figure 2-4 (Davies *et al.*, 2018:7).

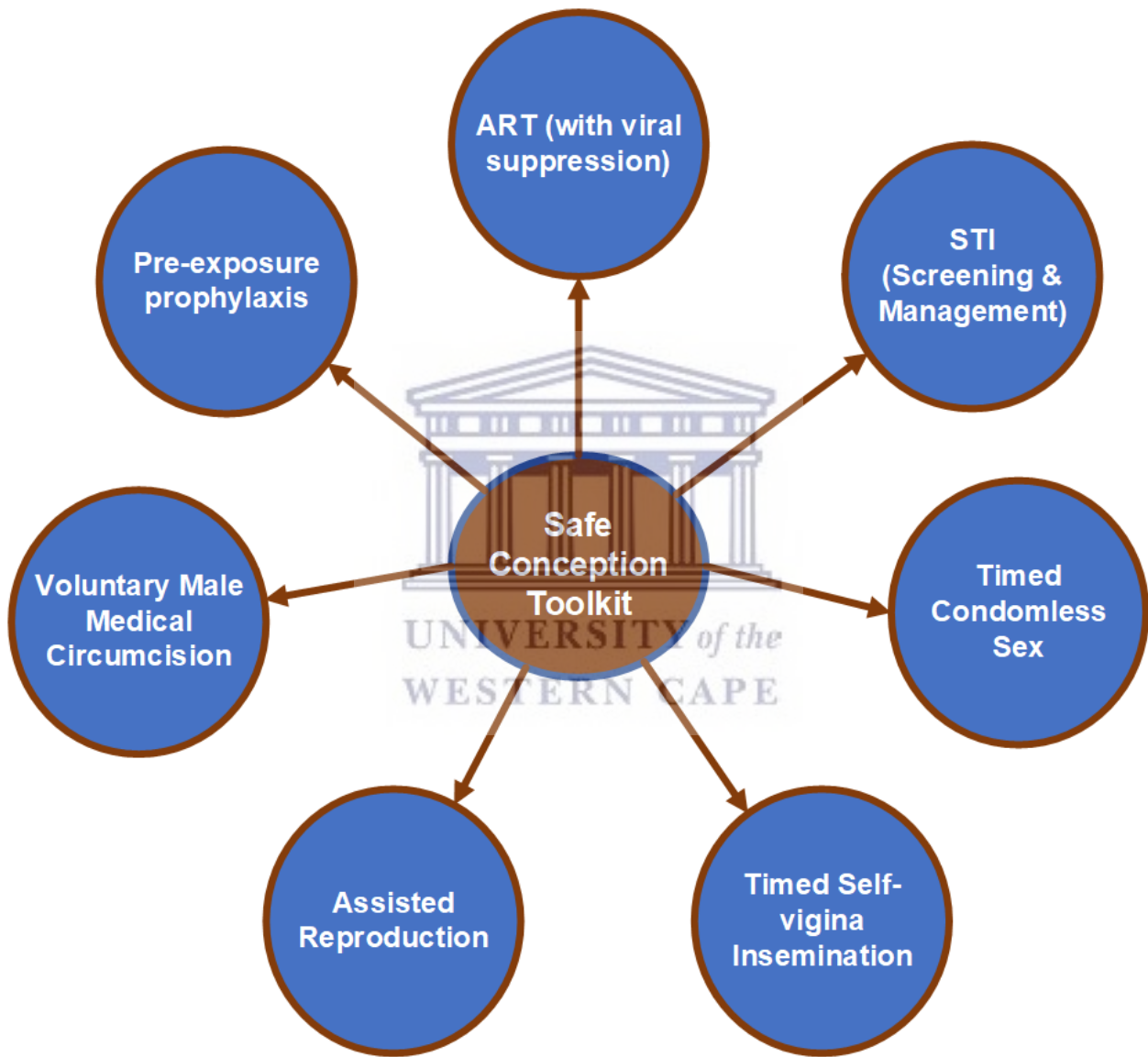


Figure 2-4: Safe conception strategies. *Source: Adapted from Davies et al., (2018:27).*

ART – antiretroviral therapy; STI – sexually transmitted infections

2.7.7.1 Assisted Reproduction Strategy for Serodiscordant Partners

Also called high-technology strategy, assisted reproduction includes invitro fertilization (IVF), sperm-washing (SW) with intrauterine insemination (IUI), intracytoplasmic sperm injection (ICI) (Chadwick 2011:148; Davies *et al.*, 2018:6). These strategies can be adopted (in various combinations) by both serodiscordant and seroconcordant partners to achieve conception with relatively high safety, considering the favourable maternal and pediatric outcomes when coupled with antiretroviral medication (Gilling-Smith *et al.*, 2001:566; Bujan and Pasquier, 2016:921; Safier and Sauer, 2017:14). But for its expensiveness, limited accessibility and invasive nature (Matthews and Makherjee, 2009:7; Davies *et al.*, 2018:15), it provides a better alternative to natural conception in that the “risk appears to be zero (95% CI 0-0.09%)” from 3000 cycles of assisted reproductive technique from eight European reproductive centres (Centres for Reproductive Assistance Techniques in HIV in Europe – CREAThE) (Bujan and Pasquier, 2016:919).

In a systematic review and meta-analysis, Barnes and colleagues (2014:421) assessed the procreative outcomes of serodiscordant partners (both male and female index serodiscordant) in twenty-four studies in which there was intrauterine insemination or in vitro fertilization. In all, there were over 9000 cycles without any seroconversion and with higher pregnancy rates than found in uninfected infertile partners. These findings have solidly grounded assisted reproduction as the safest option for serodiscordant couples because it poses the lowest possible risk (Safier and Sauer, 2017:15). It is especially of many benefits if there are issues of infertility which are usually associated with HIV seropositivity (Chadwick *et al.*, 2011:149). These advantages notwithstanding, Ngure and colleagues (2014:4) gathered that majority of their participants

(serodiscordant with both male and female index cases) interviewed found the method unnatural and expressed that it is “not the right way to conceive”. They also expressed fear of a mix-up whereby another person’s sperm might be used for the procedure rather than the actual father. Similar fears were expressed by MLHIV when the strategy was discussed with them (Taylor *et al.*, 2013:8). A quote from an interview with a HIV provider (Finocchario-Kessler *et al.*, 2014:11) which portrays these misgivings is as follows:

“You know depending on our cultures, for a woman to go and have artificial insemination, later the man may not accept that is his child. He might think that in the laboratory they changed and put another man’s sperm into his wife. Catholics believe so much in doing things the religious way, the Godly way. The natural way”.

HIV-care providers must be enlightened in SCTP to anticipate these fears and give appropriate explanations to clear them.

2.7.7.2 Natural Safe Conception Methods

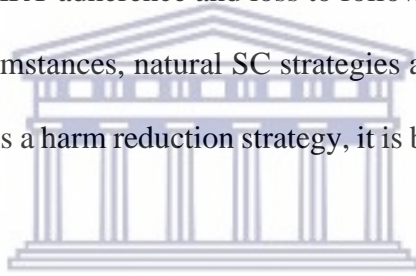
The two strategies that allow HIV-serodiscordant or -seroconcordant partners to conceive naturally and safely i.e., without technological assistance are unprotected sexual intercourse and vaginal insemination; both timed to the peak of the woman’s fertility period. The advantage of these strategies is that contact with semen and or vaginal fluids is limited to a few days of the month when partners adopt unprotected (condomless sex) thereby lessening the risk of HIV transmission and acquisition (Matthews and Mukherjee, 2009:8). In the case of timed vaginal self-insemination (TVI), which is mainly for female positive serodiscordant partners, the HIV risk is avoided as the semen is collected into a needles syringe/puppet or turkey bulb and deposited into the vagina after protected sexual intercourse (Matthews *et al.*, 2012:2; Mmeje 2012:3).

However, the extent of safety of timed unprotected sexual intercourse is unknown (Ciaranello and Matthew, 2015:1526). The natural SC strategies work on the premise that since the estimated per coital risk of HIV infection ranges between 4 (95% CI 1-14) and 8 (95% CI 6-11) per 10,000 exposures (Patel *et al.*, 2014:5) and the HIV-uninfected partner has a 1.8 (95% CI 1.01-3.62; $P < 0.05$) increased risk of being infected (Brubaker *et al.*, 2011:318), when partners have reduced frequency of unprotected sexual intercourse by limiting it to only peak fertility periods, the cumulative risk is reduced which is protective of the uninfected partner (Brooks *et al.*, 2017:859). Coupled with ART (for the infected partner), the synergy of protection from the antiretroviral and the natural SC strategy protects the uninfected partner (Mmeje *et al.*, 2012:2; Davies *et al.*, 2018:9).

To be effective, accuracy with the fertile days is crucial. These can be determined using calendar calculation, basal body temperature monitoring, cervical mucus monitoring, urine hormone checking (with ovulation kits) and serial ultrasound (Mmeje *et al.*, 2012:3). Despite the advantage of being non-invasive, affordable, accessible, easy to use, and natural, the adoption of natural SC strategies has been under debate over the years. Some reproductive-aged PLHIV expressed misgivings about TVI. While some indicated religious contradictions, others found it an unnatural way to conceive in humans as it is used for animal reproduction and hence opposed their use. Some women living with HIV expressed difficulty in getting their partners to adopt the VIT aside the conception that a child born by this means is not “a real child” (Finocchiaro-Kessler *et al.*, 2014:11; Ngunjiri *et al.*, 2014:4; Mindry *et al.*, 2018:36-37). However, others have successfully adopted it (Schwartz *et al.*, 2017:48; Mindry *et al.*, 2018:36).

There is also the argument that in an era where robust evidence lends credence to undetectable = untransmittable (U=U) (Cohen *et al.*, 2011:6; Cohen *et al.*, 2016:835); where HIV risk is

negligible, serodiscordant partners who desire to have biological children should not be made to bother about HIV transmission and acquisition through unprotected sexual intercourse (Boerner, 2017). However, the context for such a stand is not plausible in all settings. A virally suppressed state is not constant or self-sustaining but depends on many personal and environmental factors including ART availability, supply and adherence as well as viral load monitoring among others. In resourced – constrained settings such as SSA, continuous supply of antiretroviral medications is not always assured; especially so in the hard-to-reach areas. More so, there are not enough logistics for viral load monitoring which is very necessary for practising U=U. Further, the commonly reported suboptimal ART adherence and loss to follow-ups are unfavourable (Levison *et al.*, 2011:6). Under these circumstances, natural SC strategies are ideal as they are easy to use, affordable, accessible and safe. As a harm reduction strategy, it is better than not using any method of SC strategies.



Another argument is that timed unprotected sexual intercourse (TUI) still presents appreciable elements of risk to the uninfected partner since the actual degree of safety is unknown, and as such, it is unethical to offer it (TUI) despite its advantages (Safier and Sauer, 2017:16). It is further argued that considering that infertility/subfertility is usually associated with HIV infection, pregnancy may delay or not be achieved therefore unprotected sexual encounters may not achieve the intended purpose yet heighten the chances of HIV transmission due to accumulating risk (Safier & Sauer, 2017:16; Chadwick *et al.*, 2011:83).

In consonance, Safier and Sauer, (2017:15) indicated that the strategies pose a public health threat; once advised that unprotected sexual intercourse in the interest of conception is permitted, clients may compromise standards of safer sex thereby, through behaviour modification, indulge in risky

behaviours afterwards. This expression of fear of risking compromised condom use was also found in another study as the reason why some HIV-care providers refused to educate clients on natural SC strategies (Matthews *et al.*, 2014:215). Based on these, it is opined that assisted reproduction should be the acceptable and first-line method of reproduction among serodiscordant partners (Safier and Sauer, 2017:16). In dissonance, Semprini and colleagues' (1997:1402) put it forward that partners affected by HIV should not be debarred from timed condomless sexual intercourse for procreation.

Though these arguments are justifiable, it is also known that serodiscordant partners in SSA risk HIV infections and indulge in risky behaviours with the intent to achieve pregnancies and seroconversions in the absence of affordable and accessible SC guidance have been recorded (Matthews & Mukherjee, 2009:6; West *et al.*, 2016:2; Keating *et al.*, 2012:3; Ngure *et al.*, 2016:1588). Meanwhile, some observational studies have attested to the acceptance, feasibility, patronage and effectiveness of natural SC strategies in reducing new HIV infections (Del Romero *et al.*, 2016:2; Barreiro *et al.*, 2006:345; Schwartz, 2017:49-50; Matthews *et al.*, 2017:45-48; Mindry *et al.*, 2018:33-35).

Though these studies are few in number and were not robust due to small sample sizes and absence of randomization, they portrayed that, practised under adequate education and guidance, natural SC strategies could help reduce HIV incidence (Matthews *et al.*, 2017:2). In Spain, Barreiro *et al.* (2006:324-325) reported nil seroconversions when a prospective study of 62 serodiscordant partners (both female-infected and male-infected serodiscordants) achieved 76 natural conceptions. This study spanned 1998 and 2005. Another study was documented from the same setting in which a prospective cohort study (from 2002 to 2013) made up of 161 serodiscordant

couples (with both male and female index cases). A total of 144 natural pregnancies occurred with no seroconversions within six months of unprotected vaginal sexual intercourse (Del Romero *et al.*, 2016:2).

In both studies, the participants were reported to have used timed unprotected sexual intercourse with viral suppression. Recently, another study from Uganda also reported seven pregnancies without seroconversions from 23 female-index-serodiscordant relationships. In this study, the participants reportedly used both unprotected sexual intercourse and vaginal self-insemination; both timed to the peak of fertility after viral suppression with ART resulting in seven couples achieving pregnancies without seroconversions (Mindry *et al.*, 2018:32-33). Though these studies were not robust enough due to the small number of participants and absence of randomization, they somewhat attest to the safety and effectiveness of these strategies. Further, findings on assisted reproduction found some barriers to its adaptation and use. The costs of services are exorbitant and beyond the affordability of the average person. Also, these facilities are few and are usually located in an urban setting that are farther from most people who need them (Laar, 2013:6; Pinsky, *et al.*, 2017:3 & 6; Huyser & Boyd, 2013:93; Dyer, *et al.*, 2013:2758).

Considering that in SSA, reproductive-aged WLHIV disproportionately contribute to the majority of new HIV infections; and most are in stable serodiscordant relationships usually with fertility intentions (WHO, 2012:7). Routinization of low-technology harm reduction SC strategies are therefore, important to limiting the occurrence of new HIV transmissions – a necessity to curbing the disease that is very endemic to the region (Matthews *et al.*, 2017:8).

2.7.7.3 Adjunctive Safe Conception Strategies

Other strategies (adjuncts) in the toolkit of SC that are not directly used to achieve conception but are necessary for synergy, and thus, improving the effectiveness of the conception-specific harm reduction strategies. They include ART, PrEP, voluntary medical male circumcision and treatment of STIs (Matthews *et al.*, 2012:2; Davies *et al.*, 2018:9; Matthews & Mukherjee, 2009:7- 8). The first three are achieved using antiretroviral medications. The medication can be used to prevent transmission of HIV by taking it before sexual intercourse (pre-exposure prophylaxis - PrEP) or as a treatment for secondary prevention in the person infected with the virus (Cohen *et al.*, 2012:1). The assisted reproduction and the natural SC strategies are anchored on viral suppression with ART (Safier and Sauer, 2017:13; Davies *et al.*, 2018:2).



2.7.7.4 Antiretroviral therapy

It is imperative that the HIV-positive partner(s) is initiated, firstly, on antiretroviral medication as per the relevant guidelines for at least six months within which it is estimated that viral load would have been substantially reduced (< 200 copies/ml) (Davies *et al.*, 2018:9-10). Literature solidly grounds that suppressed viral load drastically lowers the risk of heterosexual HIV transmission from the infected partner to the uninfected partner. An HIV Prevention Trial Network (HPTN) 052 randomised control trial study in which 1763 serodiscordant partners were sectioned into early and delayed ART treatment groups spanning three years revealed that the risk of infecting the uninfected partner was negligible.

Early initiation of ART was found to be associated with a 96% HIV transmission risk reduction in the absence of other STIs (Cohen *et al.*, 2011:6; Cohen *et al.*, 2016:835). This finding is supported

by other investigations. In two separate meta-analyses of several studies, HIV transmission risk between serodiscordant heterosexual couples (with confirmed undetectable plasma viral load of <400copies/ml in the index partner which was both males and females) was assessed in the context of ART use. The transmission rate was 0 per 100 person-years (95% CI = 0 - 0.05) (Loufty *et al.*, 2013:9-10) and 0 with an upper 97.5 confidence limit of 1.27 per 100 person-years (Attia, *et al.*, 2009:1399). Regarding the cases of HIV transmission which occurred due to unsuppressed plasma viral load, the HIV transmission risks were 0.14 per 100 person-years (95% CI = 0.04 – 0.31) and 0.46 (95% CI = 0.19 – 1.09) respectively which translates into a relatively low risk of infection.

Considering the disparity between plasma and genital viral load (where HIV RNA was detected in cervical secretions despite undetectable plasma loads) there is a question as to whether the client is contagious in such context (Albert *et al.*, 2014:676). But authors of the HPTN 052 maintained that such phenomenon was observed in the study yet the drastic reduction in the risk of transmission (of 96%) was recorded (Cohen *et al.*, 2012:2).

This finding from the HPTN 052 study whereby antiretroviral medication can be used for both treatment and prevention (ART and PrEP) has revolutionised HIV response in serodiscordant partners and forms the core of combination prevention programmes in this population (Celum, *et al.*, 2013:6). In this dimension, the universal test and treat as well as the treatment as prevention algorithms whereby persons found HIV-positive are initiated on ART as soon as possible, regardless of their CD4+ count, are seen as game-changers that can facilitate the rendition of SC services (Davies *et al.*, 2018:1; Nah *et al.*, 2017:1). Where resources are available, a person on ART should have his/her viral load monitored, a least once in six months or twice within the duration. A viral load of ≤ 200 copies/ml is ideal to initiate attempting conception (Davies *et al.*,

2018:9-10). In the absence of the ideal situation, it is advised that the partner with HIV should have been on the ART for at least six months with optimal adherence to initiate SC (Davies *et al.*, 2018:9).

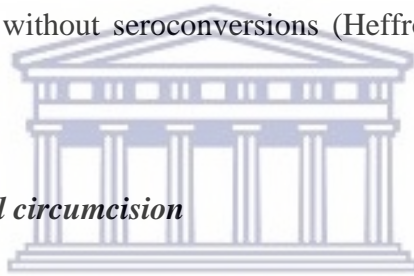
2.7.7.5 Pre-exposure Prophylaxis

The WHO (2015:14) recommended that Pre-exposure prophylaxis (PrEP) be offered to uninfected partners in serodiscordant relationships to prevent infection. A biomedical HIV prevention intervention refers to the taking of antiretroviral medications by an uninfected person in anticipation of HIV risk exposure. As such it is adopted as an adjunct in the SC toolkit which can be employed to further reduce the risk of infection for the uninfected partner in a serodiscordant relationship where a biological child is desired by natural conception (Matthews and Mukherjee, 2009:8; WHO, 2015:8; Heffron *et al.*, 2016:2; Davies *et al.*, 2018:11). In a clinical trial in Kenya and Uganda, PrEP was found to reduce HIV risk to uninfected partners in serodiscordant relationships by over 60% when used alongside other HIV preventive measures like a condom (Baeten *et al.*, 2012:5).

Unlike ART which requires continuous administration of antiretroviral medication, PrEP must be taken seven (7) days before unprotected vaginal sexual intercourse to achieve protection and then daily for as long as the exposure could last (Avert, 2020). In the context of procreation, this notwithstanding, its use seemed redundant when the index partner is on effective ART and has achieved sustained viral suppression whereby HIV risk is negligible. This was found in a simulation mathematical model that if an HIV-infected male partner is on effective ART and unprotected sexual intercourse is limited to the peak of fertility in the absence of STIs, PrEP

provides a little added benefit when serodiscordant partners attempt pregnancy by natural conception (Hoffman *et al.*, 2015:1540; Davies *et al.*, 2018:2).

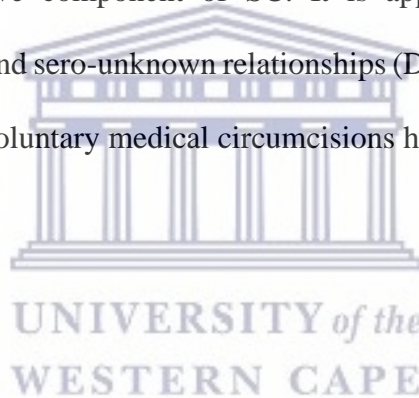
This notwithstanding, Ciaranello and Matthews (2015:1526) opined that away from the modelling assumptions into the real-world situation, these findings may not hold due to unforeseen circumstances like subfertility, suboptimal ART adherence and un-sustained suppression of viral load. Under these circumstances, PrEP is ideal to prevent transmission of HIV to the uninfected partner. Pre-exposure prophylaxis has been used successfully in a clinical trial that involved a large cohort of partners in serodiscordant relationships where pregnancies were achieved and normal babies delivered in East Africa without seroconversions (Heffron *et al.*, 2016:3; Mugo *et al.*, 2014:12).



2.7.7.6 Voluntary male medical circumcision

This is the consensual surgical removal of the retractable fold of tissue that covers the head of the penis (foreskin). It is described as a once-off lifetime HIV preventive procedure. It reduces the heterosexual female-to-male sexual HIV risk by 60% (USAID, 2012:2). It is known that the inner foreskin surface has Langerhans' cells that have HIV receptors which are particularly vulnerable and aid the entry of HIV into the body. It is also reported that the area under the foreskin, apart from providing a moist and dark spot in which germs thrive, is also easily torn or bruised during sex and thereby creating impaired skin integrity which facilitates HIV entry into the tissues. This also creates vulnerability to other STIs in males which, symptomatic or asymptomatic, increase the risk of HIV transmission and acquisition. Thus, circumcision leads to the elimination of these foreskin-related vulnerabilities and thereby lessens the HIV risk (Avert, 2019; Szabo, 2000; 1593).

A systematic review on the subject matter (male circumcision) revealed that dating back to the 1980s, over thirty studies – both observational and randomised control trials - have shown that the procedure is protective against heterosexual female-to-male HIV acquisition (Siegfried *et al.*, 2009:1). The review established then that male circumcision reduces HIV acquisition risk among heterosexual men by 38 – 66 per cent over 24 months concluding that it provides partial protection against HIV infection. On account of this, it was recommended as an element in combination HIV prevention interventions such as SC (Siegfried *et al.*, 2009:9). Voluntary male medical circumcision is relatively new among the combination HIV preventive strategies (UNAIDS, 2015a:105) and is an adjunctive component of SC. It is appropriate for male partners in serodiscordant, seroconcordant and sero-unknown relationships (Davies *et al.*, 2018:7). From 2008 to the end of 2014, 9.1 million voluntary medical circumcisions have been carried out (UNAIDS, 2015a:105).



2.7.7.7 Treatment of STIs

Sexually transmitted infections refer to a group of communicable diseases that are transmitted and acquired through sexual activities (AIDSinfo, 2019). They include gonorrhoea, syphilis, chlamydia and herpes among others. These conditions are associated with inflammation in the genital tract causing impaired epithelial integrity and as such compromising their innate functioning as barriers.

Apart from these inflamed tissues presenting surfaces for direct entry for HIV, they also attract the increased concentration of CD4 T-cells and other immune cells into the genital area thereby providing a target for infection by the virus (HIV). Also, in the presence of STIs, there is increased

shedding of HIV in seminal/vaginal fluids heightening the risk of HIV transmission. Therefore, in the presence of STIs, persons living with HIV become more infectious while the uninfected person becomes more susceptible to infection – a complex bidirectional relationship that enhances HIV transmissibility (Chun, *et al.*, 2013:9; Mwatelah *et al.*, 2019:33-34). Screening and management of STIs, as a component of SC, ensures that this bidirectional relationship which compromises the protection of the uninfected partner is obviated for their attempt of pregnancy to be safe, meeting the goal of preventing new HIV infections in the peri-conception period (Davies *et al.*, 2018:10).

2.7.7.8 The safe conception package for a client

What constitutes a SC package for clients may differ between individuals and partners. A woman living with HIV who wants to have a biological child may be in a seroconcordant, serodiscordant or sero-unknown relationships (Schwartz *et al.*, 2017:45). While it is very paramount that the index partner should be on ART, the dynamics of the relationship, the clients' profile and preferences as well as the available resources determine the type of SC strategies that can constitute a package for them. The strategies can be used either in combination or alone. For instance, in the current South African SC guideline, a partner who is virally suppressed have the choice to forego other SC strategies or not (Davies *et al.*, 2018:2).

Similarly, serodiscordant partnerships with a circumcised partner would not need voluntary medical male circumcision as a component of their SC package (Schwartz *et al.*, 2014:281). Elements of a typical basic SC package include STIs screening and syndromic management; education on the SC strategies (ART, PrEP, voluntary medical male circumcision, timed unprotected sexual intercourse, timed vaginal self-insemination, and assisted reproduction) for

choices to be made. Before this, routine HIV care including taking of reproductive and HIV histories; HIV testing for the partner with unknown status; viral load and or CD4 testing for a positive partner(s); pregnancy testing and screening for infertility are necessary for clients (Schwartz *et al.*, 2014:281; Schwartz *et al.*, 2017:44; Brown *et al.*, 2016:2).

2.7.8 Demand for safe conception education

While there is much consensus among HIV-researchers, -activists and -experts for SC (Matthews *et al.*, 2017:2), the question remains as to whether there is evidence of the need for it; and whether it is feasible and acceptable. There is evidence of the need for SC as a preventive HIV response strategy to ensure comprehensive reproductive healthcare is rendered to the clientele without incurring new HIV infections. In the first place, like any other woman, a WLHIV has the legal right to found a family and decide how many children she wants to have and when to have them (UN, 1948). And though this right had been denied WLHIV over the years on account of public good, in an era of enough and efficacious HIV preventive interventions against both vertical and horizontal HIV transmission, there is no justification to deny WLHIV such right any more (Bujan and Pasqueir, 2016:923).

It is estimated that HIV-serodiscordant partnerships constitute 44% of all marital and cohabiting partnerships in SSA, and sexual transmission within this mixed-status relationship may account for over 60% of HIV incidence (Spino *et al.*, 2010:1; WHO, 2012:7). As the reproductive-aged WLHIV is a fast-growing subpopulation and the number of WLHIV who desire to have children are high - between 20% and 75% (Stanwood, *et al.*, 2007:4; Finocchiaro-Kessler *et al.*, 2010:1109; Schwartz *et al.*, 2012:73; Laar, 2015:5; Okome-Nkoumou *et al.*, 2015:4).

Further, implementation pretests have also shown that when SC education is available, it is highly accepted as well as patronised by PLHIV (Schwartz *et al.*, 2017:49; Schwartz *et al.*, 2019:4; Brown *et al.*, 2016:7; Mmeje *et al.*, 2016:7; Mindry *et al.*, 2018:36). Two separate studies evaluating different aspects of the stand-alone Sakh'umndeni SC programme which takes a referral from different HIV facilities in Johannesburg - South Africa revealed favourable outcomes. Started in 2013, the clinic recorded 692 clients by 2017. At the first evaluation, it had enrolled 283 serodiscordant, seroconcordant and sero-unknown couples. It assessed service utilization and uptake of SCs strategies. Overall uptake of at least one strategy was 80% a satisfactory indication of feasibility and acceptance of SC among PLHIV (Schwartz *et al.*, 2017:45-49; Schwartz *et al.*, 2019:5).

Another SC pretest in Uganda yielded successful outcomes regarding acceptability, feasibility and uptake (Mindry *et al.*, 2018:37). In all these pretests, the participants indicated acceptance and usefulness of the programme to include acquisition of knowledge and self-efficacy for informed fertility decisions (Schwartz *et al.*, 2014:283; Schwartz *et al.*, 2017:45-49; Schwartz *et al.*, 2019:5-7; Brown *et al.*, 2016:7; Mmeje *et al.* 2016:7).

These successful pretests notwithstanding, HCW-initiated-conversation on SC remains a missing link that negates many opportunities these providers have to educate on SC at every contact with their clients. This lapse on the side of HCWs was found to be associated with poor knowledge, attitude and skills on SC – a result of lack of training on the subject (Matthews *et al.*, 2017:6-7). In Ghana, Laar *et al.* (2013:4) observed from a mixed method study that HIV-care providers had poor knowledge and skills on available options for WLHIV to safely conceive despite an overwhelming approbation to the right of these women to have their biological children. A similar

finding was observed in Uganda and HIV-care providers regarded condomless sex for conception as ‘a gambling’ work (Finocchario-Kessler *et al.*, 2014:5). Considering the growing population of WLHIV who desire biological children, the acceptability and patronage of the pretests and the inadequacies in provider competencies, a demand is placed on SC training and delivery. However, few countries have guidelines and training programmes to meet this demand and hence the need for such studies (Matthews *et al.*, 2017:6).

2.7.9 Safe conception dovetails the 95-95-95 and the 2030 HIV agenda

The primary goal of SC is to prevent seroconversion (Matthews and Mukhurjee, 2018:2) of the uninfected partner in the process of achieving conception which accords with the 2030 agenda of reducing new HIV infections (UNAIDS, 2016:5). HIV testing for partners of serodiscordant couples is recommended, at least quarterly whiles they attempt pregnancy (a component of SC for serodiscordant couples) is necessary for early initiation should seroconversion inadvertently occur (Davies *et al.*, 2018:12). This regular testing of the uninfected partners for them to know their status contributes to the first 95 of the fast-track agenda – which is geared towards 95% of all persons living with HIV knowing their status (Davies *et al.*, 2017:37).

By emphasising ART initiation and viral suppression as the prerequisites for SC, the second and the third 95s are also being engendered. In the long run, SC contributes to ending HIV/AIDS as a public health threat by preventing new infections from serodiscordant partnerships (Mmeje, Njoroge *et al.*, 2015:157).

2.7.10 Factors influencing provision and uptake of safe conception education

These may be health system factors or client-related issues. The former bears on the availability of formal documents on SC, inadequately-equipped HIV-care providers and their activities. Client-related issues are factors within the domain of WLHIV that challenge their uptake of SC strategies (Gwokyalya *et al.*, 2019:2; Finocchario-Kessler *et al.*, 2012:3; Finoccharia-Kessler *et al.*, 2014:5; Matthews *et al.*, 2017:8).

2.7.10.1 Health system-related factors

Health system-related factors that influence provision and uptake of SC bear on HIV-care providers and the context surrounding the provision of care (Matthews *et al.*, 2017:7). Lack of policy guidelines, training models and client education tools are some of system-level factors that influence SC education. From a qualitative study in Uganda that investigated barriers that hamper SC education, Goggin and colleagues (2014:1000) found that HIV-care providers indicated their hands were tied up in the absence of formal guidelines authenticating such care. This issue was also observed in Ghana (Laar, 2013:1). Thus, uncommonly cited but a very important challenge, the absence of formal policy guidelines to guide SC education and nest it within the reproductive health service makes HIV-care providers unwilling to render such care.

Though many published international guidelines have niched a place for SC within the reproductive HIV programmes (WHO, 2012:1; ASRM, 2015:1), few SSA countries have couched out national guidelines to that effect viz: South Africa, Botswana, Kenya and Uganda (Davies *et al.*, 2018:1). South Africa has reviewed its guidelines to reflect the current trends in reproductive health and SC (Davies *et al.*, 2018:1). In the absence of these guidelines to specify the package

and terms of reference, few providers can affect SC education (Cooper *et al.*, 2015:5; Mindry *et al.* 2013:597-598).

Another very crucial factor impairing SC education is providers' lack of access to training as well as tools for SC education, leaving them ill-equipped with poor knowledge, attitude, competency and skills to discharge this duty (Goggin *et al.*, 2015:658; Goggin *et al.*, 2014:1001; Matthews *et al.*, 2017:4; Mmeje *et al.*, 2013:579; Mmeje *et al.*, 2016:6). Mmeje and colleagues (2016:3) and Matthews *et al.* (2017:1) assert that for WLHIV and their partners to be able to attempt SC effectively, they need accurate and adequate education on SC strategies and thus, there is a need for the development of training programmes and then training for the providers on the subject.

Many studies identified the need for training programmes as well as training for HIV-care providers on SC to bridge the gap of inadequate knowledge, attitude and skills and thereby enable them to deliver SC education effectively (Breitnauer *et al.*, 2015:6; Mmeje *et al.* 2016:3; Matthews *et al.*, 2017:4; Van Zyl, 2013:83; Gutin, 2019:116; Iliyasu *et al.*, 2019a:538; Finocchiaro-Kessler *et al.*, 2014:10; Schaan *et al.*, 2012:1124). This notwithstanding, in SSA, very few published studies bore on training programmes and training of HIV-care providers from South Africa (Schwartz *et al.*, 2014:278), Kenya (Mmeje *et al.*, 2016:3; Brown *et al.*, 2016:4) and Uganda (Mindry *et al.*, 2018:32) from private sites or research settings usually as study projects (Matthews *et al.*, 2017:7; Schwartz *et al.*, 2014:278; Brown *et al.*, 2016:4).

In consonance, many studies (both quantitative and qualitative) reported HIV-care providers' ignorance and inadequate knowledge on safer conception as well as poor attitude, skills and interest in SC education as a major barrier to the provision of this service (Brown *et al.* 2016:6-7;

Schwartz *et al.*, 2014:279; Iliyasu *et al.*, 2019a:540; West *et al.*, 2016:8). The degree of inadequacy exhibited by HCWs concerning these variables (knowledge, attitude, self-efficacy, interest and practice of SC education) vary between SC components and from one study area to another.

2.7.10.2 Knowledge of safe conception among HIV-care providers and WLHIV

The glossary of medical education defines knowledge as the “... awareness of facts, data, information, ideas or principles to which one has access through formal or individual study, research, observation, experience or intuition” (Wojtczak, 2002:451). Knowledge of a health professional may be measured objectively or subjectively (Menon *et al.*, 2009:1025). Literature on HIV-care provider knowledge on SC, mostly qualitative (Woldetsadik *et al.*, 2016:1371), shows mixed findings ranging from an exhibition of adequate knowledge to self-report of complete ignorance on the subject. The majority of the studies point to inadequacies with varying degrees and details; even in the same geographical setting.

What constituted the body of knowledge on SC per the report of the various studies also differed. Some enquired of all the strategies (both the conceptive-specific and the non-conceptive-specific/adjuncts) including their application to serostatuses, while others worked with only some aspects. Except for a few studies (Schwartz *et al.*, 2014:279; Matthews *et al.*, 2016:5-6; West *et al.*, 2016:8) which reported otherwise, the majority of the investigations revealed inadequate HIV-care provider knowledge on SC amid a general agreement that PLHIV have the right to reproduce (Laar, 2013:4). For the qualitative studies, exception for Finocchario-Kessler *et al.* (2014:19), the degrees of the respective findings could not be quantified or categorised for effective and objective comparison.

Essential knowledge in SC entails insight into serodiscordance and its dynamics related to the prevention of seroconversion. It is crucial that HIV-care providers have mastery over this concept and effectively communicate it to their clients to dispel myths and misconception (WHO, 2012:36; Bishop and Foreit, 2010:9-10). The fundamental concept underlying HIV programmes and care for serodiscordant couples is to prevent seroconversion and thus, keep the uninfected partner HIV negative (WHO, 2012:1) because it is known that prevention of transmission among serodiscordant partners has a substantial effect on the overall HIV incidence and prevalence (Bishop and Foreit, 2010:5). Accordingly, there is a demand for mastery of this principle among HIV-care providers as well as a good understanding among the WLHIV and their partners.

Another facet of SC knowledge assessed among HIV-care providers is their awareness or information on SC strategies. Classified into seven (7) components parts (Figure 2-4) there is variability regarding what is known about each of the SC strategies among HIV-care providers. Generally, studies reported ignorance or inadequate knowledge of these strategies among HIV-care providers (Brown *et al.* 2016:6-7; Finocchiaro-Kessler *et al.*, 2014:1; Iliyasu *et al.*, 2019a:540; Kawale *et al.*, 2015:5; Laar, 2013:4). A few reported adequate knowledge items for SC education (Schwartz *et al.*, 2014:279; West *et al.*, 2016:6).

A qualitative study among seven (7) midwives and four (4) nurses (in addition to doctors, counsellors, clinical officers, expert clients and other HIV-care providers viz: traditional birth attendants and herbalists) explored knowledge and acceptability of three SC strategies Timed unprotected sexual intercourse (TUI), timed vaginal self-insemination (TVI) and sperm washing coupled with artificial insemination in Uganda (Finocchiaro-Kessler *et al.*, 2014:4). These providers (33 in all) were distributed across the health system [either in the HIV unit (n = 18)

family planning unit (n = 10) or community (n = 3)]. This review did not consider the findings of the traditional birth attendants and herbalists. The study analysis employed both qualitative and descriptive statistics to characterise the sample and also categorise provider knowledge of the strategies into three groups. Group one labelled ‘none’ indicated there was no knowledge at all on the strategy while the second group ‘aware’ showed the providers had ever heard of the method.

The last group labelled ‘know’ implied that the provider could give at least a partial working account of the strategy in question (Finocchario-Kessler *et al.*, 2014:19). In general, the study reported inadequate knowledge of varying degrees (Finocchario-Kessler *et al.*, 2014:6) among the 28 HIV-care providers in the formal sector. It was found that the providers had ever heard of at least one of these SC strategies. The authors found that among the HIV-providers working in the health facilities (n = 28), 23 (82%), had ever heard of TUI but only 13 (46.4%) could outline some of the key elements of the strategy (timing the peak fertility for condomless sexual intercourse and using a condom on other days) accurately (Finocchario-Kessler *et al.*, 2014:19). The authors also noted that while providers in the family planning department refer to the peak period as “unsafe”, those in the HIV unit termed it “safe”. While the difference could be due to the different orientations of the two units, it could create confusion for the WLHIV thereby jeopardise the success of the strategy (Finocchario-Kessler *et al.*, 2014:6).

As for home timed vaginal self-insemination, fewer providers knew about it compared to the TUI. More than half of the participants (16/28) had not even heard of it, only 3 (10.7%) could give some explanation of how it works hence, they did not educate their clients on it even when the clients prompted them about it (Finocchario-Kessler *et al.*, 2014:8). Two excerpts that expressly captured the situation of inadequate knowledge of providers in this study (especially on VIT) reads:

“Actually, we are getting those testimonies from them [clients]. But we don’t know how perfect it is but they always want to enquire from us if that is the right thing to do. ...we don’t have the correct answer to tell them. They may read on the internet so they come and tell us this is what we found out so we are going to practice that. We don’t know how effective it is. I’ve never got anyone telling the results of using a syringe. I think it fails”.

“We don’t know how safe it is. Yeah, we rarely talk about it. ... talk about things we are not sure of. So, we just know that that kind of thing is there. Maybe some of them [patient] know, but we don’t bring it up during our sessions”.

From these excerpts, it is clear that the PLHIV had some knowledge on the strategy (VIT) and enquired of it from their providers. However, the providers did not have adequate knowledge and the skills to educate their client effectively on the matter. The authors noted that one provider feared that using the syringe to collect the sperm for VIT may rather cause some harm to the sperm and cause birth defects and malformations (Finocchario-Kessler *et al.*, 2014:8). This misinformation, if not quickly replaced with accurate information, is likely to generate aversion to VIT if communicated to the clientele.

Knowledge on sperm washing and artificial reproduction, the third SC strategy assessed, was even lesser. Only two (2) of the HIV-care providers representing 7% could give a credible account of it (Finocchario-Kessler *et al.*, 2014:8), though 50% had ever heard of the strategy (Finocchario-Kessler *et al.*, 2014:19). The providers themselves verbalised their need for training to upgrade their knowledge on SC (Finocchario-Kessler *et al.*, 2014:10).

Another study in Uganda that investigated not only the knowledge but also attitude, self-efficacy and interest of HIV-care providers on SC strategies was conducted in Uganda by Goggin *et al*

(2015:651). The study, the baseline assessment of a longitudinal study included medical/clinical officers (10), nurses (13) and counsellors (34) who filled questionnaires at baseline for this finding (Goggin *et al.*, 2015:652). The questionnaire was a novel one which was also adapted for the current study (Woldetsadik *et al.*, 2016:1371). The study used seven (7) Likert scale items with ‘yes, no, don’t’ responses which assessed knowledge of SC strategies. Using simple proportions, the sum of affirmative responses determined the knowledge of the providers (Goggin 2015:653). The scale assessed awareness of SC strategies for serodiscordancy in general, then specifically TUI, TVI, sperm washing and PrEP. An item also assessed awareness of the availability of approved SC guidelines.

Similar to Finocchiaro-Kessler’s and colleagues’ (2014:19) findings, well over 4/5ths (86%) of the providers were aware of SC and TUI was the most popular (75%) followed by sperm washing (53%) then timed vaginal self-insemination (51%) (Goggin *et al.*, 2015:656). A little over a third (37%) knew where to refer clients for sperm washing. The authors also reported a unanimous agreement, among the providers, to receive SC training to facilitate client education on the subject (Goggin *et al.*, 2015:656). Knowledge on adjuncts such as voluntary medical male circumcision, screening and management of STIs were not assessed but PrEP was.

From Nigeria, Iliyasu and colleagues (2019a:536) reported on the HIV-care providers’ knowledge of SC and their attitude towards childbearing among PLHIV. The sample size of 294 HIV-care providers were made up of nurses and midwives (55), doctors (123), counsellors/social workers (41) and others. A structured questionnaire was used. On a Likert scale of up to five points with responses ranging from either ‘very familiar’ to ‘not at all familiar’, the participants were asked to rate themselves on 8 items which bore on their knowledge of SC strategies. One of such questions

read “How familiar are you with artificial insemination at home for HIV-positive couples?” On analysis, responses that rated ‘very familiar’ signify good or adequate knowledge while others (‘somewhat familiar’, ‘slightly familiar’ or ‘not at all familiar’ were deemed poor knowledge (Iliyasu *et al.*, 2019a:540). Less than a third (31.3%) of the participants reported having good knowledge on SC strategies for serodiscordant couples while a quarter (25.2%) were not at all familiar with any. Regarding the specific SC strategies, slightly more than a fifth (21.4% and 20.1%) of the participants were very familiar with TUI with or without PrEP respectively.

Similar to the findings of the two previous studies outlined earlier TUI was the most familiar strategy among the participants (Goggin *et al.*, 2015:656 and Finocchiaro-Kessler *et al.*, 2014:19), followed by sperm washing (20.1% and 18.0% respectively). Least familiar was TVI (16.0%) (Iliyasu *et al.*, 2019a:540). The authors concluded low SC knowledge among HIV-care providers. These inadequacies in SC knowledge limited provider SC education (Matthews *et al.*, 2017:5).

Low knowledge on SC is not limited to the developing countries only. In the US, inadequate knowledge on SC was observed which warranted provider education. Assessing knowledge on a range of responses of “very familiar”, “somewhat familiar”, “slightly familiar”, and “not at all familiar”, only about a quarter (26%) of the providers were very familiar with the information on HIV transmission on serodiscordant partnerships while 15% were not at all familiar. Three per cent (3%) were very familiar with the safety of sperm washing and IUI; over a half (55%) of the providers reported not at all familiar with the procedures. It was also found that providers who were familiar with the procedures were more likely to have referred clients who needed them (Matthew *et al.*, 2014:1436-1437).

2.7.10.3 The attitude of HIV-care providers towards safe conception

Attitude refers to views, beliefs, perceptions and intentions that are held towards a person or thing (Nabulsi *et al.*, 2007:439). Manon and colleagues (2009:1025) also refer to the attitude of a health professional to mean their agreement/acceptance of a concept and its perceived clinical applicability and the motivation for its adoption. It is an evaluation or judgement of an object, policy, event or behaviour that informs a reaction. A provider's attitude, which may be positive, negative or neutral (Jain, 2014:1-2) influences the care a client receives and the subsequent behaviour of the client (Brown *et al.*, 2003:49; Shelton, 2001:152). Since HIV-care providers are part of the society in which they reside, they are not immune to its (society's) perspectives on PLHIV having biological children.

Studies reporting on HIV-care provider attitudes towards conception and childbearing among WLHIV (from their clientele (PLHIV) or the providers themselves) revealed some views, beliefs and feelings towards the reproductive goals and SC education which were dissuasive, ambivalent, supportive or conditionally supportive (Wanyenze *et al.*, 2013:7; Mindry *et al.*, 2013:595; Matthews *et al.*, 2017:3; Iliyasu *et al.*, 2019a:541; Goggin *et al.*, 2014:8).

Regarding childbearing among PLHIV, current studies are trending increasingly receptive attitude compared to the earlier prohibitory dispositions among HIV-care providers (West *et al.*, 2016:6). In Nigeria, Iliyasu and colleagues (Iliyasu *et al.*, 2019a:541) found inconsistencies in provider attitude towards childbearing among persons affected with HIV. On a five-point Likert scale of 'strongly agree' through to 'strongly disagree' the 294 providers who participated in the study were to respond to 11 statements on attitude towards childbearing in HIV, which included "HIV-

positive couples should not have children”. Though there was general approbation among the providers (94.2%) that PLHIV should have biological children, more than 2/3rds (67%) agree to restriction regarding the number of children they should have (Iliyasu *et al.*, 2019a:541). This partial support was also reported in another study, where providers interviewed admitted to dissuading WLHIV who had children already from childbearing while supporting those who were yet to have one (Matthews *et al.*, 2016:5).

Also, in a mixed-methods study in Uganda, Brown and colleagues (2016:5-6) assessed the attitudes of 10 HIV-care providers as part of a pilot of a SC training conducted for them. The structured interviewer-administered survey was conducted pre- and post-training. It was found that the number of providers who held the view that WLHIV should be educated to avoid pregnancy reduced from 6 to 2 (Brown *et al.*, 2016:17). Though a pilot study and the small sample size (n = 10) is very small to support generalization of the findings, it corroborates the increasing acceptability of childbearing among WLHIV which was also observed in other studies (West *et al.*, 2016:4; Laar, 2013:4). On the contrary, some providers self-reported of their attitude of fear of HIV transmission hence discouraging WLHIV from having biological children (Matthews *et al.*, 2016:5; Matthews *et al.*, 2014:214).

From client perspectives, the findings on provider attitude to childbearing among PLHIV were contradictory. From a qualitative study on fertility decisions among PLHIV in two HIV clinics in Uganda, findings showed that while some HIV-care providers-initiated conversation that enquired about the childbearing intentions of clients and offered guidance as appropriate, the situation was opposite for others. The second category of WLHIV indicated that HIV-care providers did not

endorse them getting pregnant. They, therefore default, get pregnant and remain in hiding for some time to avoid unfavourable responses as implied in these quotes:

“Health workers do not want to hear that you want to conceive or bear children’. When we conceive, we have to first hide for some time, about 4 months, because counselors and doctors here do not want us to conceive” (adult HIV- positive female).

“They do not support anyone who wants to give birth. This has forced some women to shy away from treatment due to the fear of how the counsellors or doctors will treat them. The time I was pregnant, the doctor shouted at me and scared me that I was going to die, I went back home when my pressure was high and I really suffered” (adult female HIV positive) (Wanyenze et al., 2013:6-7).

Thus, the experiences of HIV-provider attitude were different though care was received from the same clinic.

Fletcher *et al.*, (2016:385) also documented these differences - supportive and non-supportive - in care among WLHIV in the southeastern part of the US. Considering that some earlier studies revealed a strong prohibition against having biological children whereby providers thought it was irresponsible for WLHIV to have children (Schaan, 2012:1123; Bujan and Pasquier, 2016:919), these recent findings show improvements in provider attitudes (Goggin *et al.*, 2014:1000; West, *et al.*, 2016:6).

However, it is opined that the observed increasing HIV-care providers’ favourable predisposition to childbearing among WLHIV may not necessarily translate into their delivery of SC education (West *et al.*, 2016:2). Few studies have so far investigated HIV-providers’ attitude towards

education of HIV-affected persons on SC strategies (West *et al.*, 2016:7). In some of such qualitative studies in South Africa and Uganda, Crankshaw and colleagues (2014:3) and Matthews *et al.*, (2016:5) noted that providers were uncomfortable educating clients to have unprotected sex intercourse timed to peak fertility as is the case in TUI because it is contradictory to safe sex education which stresses condom use.

The conflict is, when the client's history and situation suggest poor health and possible infection/reinfections. The authors noted that these conflicting instances create uncomfortable circumstances which limit SC education. In the same study, another issue of discomfort noticed was the difficulty some HIV-care providers have discussing issues around sexual intercourse. It was regarded as a culturally sensitive issue which some providers could not handle (Goggin *et al.*, 2014:998; Crankshaw *et al.*, 2014:3). There were also anxieties surrounding dealing with serodiscordant partners in the absence of disclosure (Crankshaw *et al.*, 2014:5). The authors opined that these issues of discomfort made providers avoid initiating SC education, a major finding in the study (Goggin *et al.*, 2014:998; Crankshaw *et al.*, 2014:5).

Similarly, West and colleagues (2016:4) found in another South African study that the providers held the view that educating WLHIV while they are clinically or socially not ready to have children (not virally suppressed, in a stable relationship or financially sound) was inappropriate. They, therefore, hoarded the information, to be made available to those clients they deemed fit per their criteria. Even so, the providers entertained fear they might not be telling their clients the right information since they were not conversant with any guidelines to guide them (West *et al.*, 2016:8). These held them back from initiating SC education.

Some other qualitative studies in Uganda indicated that some providers expressed pessimism about strategies such as timed unprotected intercourse (TUI) (Finocchario-Kessler *et al.*, 2014:8, 13; Goggin *et al.*, 2014:8). That is, providers are hesitant selling TUI because TUI only minimises transmission risk rather than prevent it. There is also the fear of being blamed should HIV transmission occur in the process of their clients trying out the strategies they have educated them on. This fear made the providers hesitant to give SC education on TUI (Finocchario-Kessler *et al.*, 2014:8, 13; Goggin *et al.*, 2014:8). Those who took the risk of doing it, saw it not as an authentic and acceptable method but “a gambling work” (Finocchario-Kessler *et al.*, 2014:5). Hence, some providers preferred referring their clients for artificial reproduction rather than educating them on the risk reduction strategies (Ngure *et al.*, 2017:55).

Ironically, some providers also demonstrated that SC strategies that are not compatible with the traditional way of conception such as artificial reproduction and TVI are unacceptable (Finocchario-Kessler *et al.*, 2014:11). More so, others also have the belief that SC education might contribute to risky behaviour of inconsistent condom use and even so encouraging WLHIV who, hitherto, might not want biological children, into considering childbearing (Chadwick *et al.*, 2011:150; Matthews *et al.*, 2014:214; Goggin *et al.*, 2015:656; West *et al.*, 2016:7). Some HIV-care providers are also torn between meeting the reproductive health needs of PLHIV through SC education and preventing both vertical and horizontal HIV transmission as well as orphaning (West *et al.*, 2016:6). In this state of ambivalence, they weigh situations per their judgement and decide who should be assisted with SC education. Some providers indicated that under such circumstance, they prefer educating nulliparous WLHIV so they can also have at least one child while dissuading

the multiparous WLHIV from repeat pregnancies (Matthews *et al.*, 2016:4-6; Kawale *et al.*, 2015:3).

Another disturbing attitude noticed among some South African HIV-care providers that diverted their attention from delivering SC education was the assumption that once mixed-status partners are sexually active, they are both HIV-positive. This assumption of seroconcordance made the providers concentrate on maternal health and vertical HIV transmission prevention to the neglect of SC education and as such horizontal transmission to the uninfected partner (Matthews *et al.*, 2014:4; West *et al.*, 2016:5-6).

Some of these observations were also reported from a survey outside SSA. Matthew and colleagues (2014:1436-1437) found that among 145 HIV-care providers (doctors, pharmacists, nurses - contributing 26% - and others) in the New York area of USA, almost all (91%) agreed that PLHIV should have equal access to artificial reproductive technologies and a quarter (25%) believed it is irresponsible for WLHIV to conceive without it (artificial reproduction). Among them, only 65% admitted being comfortable educating HIV-affected couples on SC options and subsequently, only about a third (38%) have ever educated on TUI. Thirty-nine per cent (39%) and 24% respectively, had ever recommended PrEP and prescribed it for a partner in a serodiscordant relationship. The authors also found that providers who believed it is not irresponsibility on the part of HIV-affected individuals to attempt pregnancy outside artificial reproduction were more likely to report educating clients on TUI even without PrEP compared to their counterparts with counter belief (Matthew *et al.*, 2014:1436-1437). Thus, these HIV-care providers have a negative attitude towards natural SC methods and believe that PLHIV should not have biological children by such

means. Subsequently, such attitude limits education on natural SC strategies though they are acceptable risk reduction interventions (Bekker *et al.*, 2011:38; Davies *et al.*, 2018:9).

2.7.10.4 HIV-care providers' self-efficacy and Interest for safe conception education

Self-efficacy refers to the judgement about one's capability to perform a task. It indicates the extent of one's confidence and belief in executing a task. According to the originator of the concept (Bandura, 1989:1175), self-efficacy beliefs function as an "important set of proximal determinants of human motivation, affect, and action". High self-efficacy is predictive of the intention and performance of a behaviour. It is about one's belief in his capacity to produce a given task (Bandura, 1994:7). Thus, high self-efficacy towards say, SC education means higher confidence and is predictive of carrying it out.

Very few studies investigated SC education self-efficacy (Goggin *et al.*, 2015:651). On a 10-point Likert scale of 8 items, Goggin *et al.*, (2015:653) assessed the self-efficacy of Ugandan HIV-care providers to deliver SC education to partners with different partnership dynamics (serodiscordant or seroconcordant stable or unstable partnerships with or without disclosure). A mean item score was computed with a higher score indicating higher self-efficacy. The providers displayed high confidence with overall means score of 7.6 (SD = 1.6) and a range of 4-9.9. The least mean item score was above average (6.9). Providers with the highest self-efficacy were more conversant with SC strategies, had carried out SC education before and had higher confidence in doing so (Goggin *et al.*, 2015:651), in consonance with Bandura (1994:2) that mastery of experiences about a task improves one's confidence towards doing it. Ngure *et al.*, (2017:57) reported from Kenya that providers had their confidence beefed up with success stories of SC education. In other words,

high self-efficacy scores are promotive of SC education among the providers (Bandura, 1994; 8; Goggin *et al.*, (2015:657).

A structured pre- and (immediate and three weeks after) post-safe conception training assessment for 10 Kenyan providers also reported increased confidence to conduct client education on the subject matter. Before the training, only 2/10 of the providers were confident they could provide SC education to their clients but post-training all ten 10 providers expressed such confidence which persisted three weeks after the training (Brown *et al.*, 2016:6). SC training can boost the confidence of HIV-care providers to perform SC education and vice versa.

Similar to self-efficacy, there is a literature dearth on interest for SC education. It is an emotion that motivates learning and exploration towards the development of knowledge, skill and experience which are new or unfamiliar but comprehensible due to previous information (Sylvia, 2008:59). Crutzen and Ruiters (2015:6) noted that one's interest is the initial step to adopting an intervention and might result in its utilization. Assessing providers' SC education interest is likely to reveal whether they are motivated to acquiring new knowledge and skills in SC education.

Goggin and colleagues (2015:655) assessed SC education interest among 57 Ugandan HIV-care providers which included 13 nurses with 12 items made of 3 subscales. The subscales were: interest in providing education on specific strategies; interest in providing education to serodiscordant partners; and interest in providing education in differing partnership contexts (unstable partnerships with or without disclosure). The items had up to 10-point Likert scale responses (where 1 = low interest through to 10 = high interest or 1 = strongly disagree through to 4 = strongly agree). Mean item scores were calculated for each subscale. Higher scores represent the greater

interest of providers in SC education. Generally, the authors found a moderately high interest for SC education among the providers suggesting their openness to the task and as a new area to explore for knowledge and skill in HIV care (Silvia, 2008:59; Goggin *et al.*, 2015:655).

In a related mixed-method study in Kenya, Botswana and Ethiopia, other system-related challenges reported were time constraints, overloading of already understaffed providers (Mmeje *et al.*, 2016:7; Schaan *et al.*, 2012:1124; Pinsky *et al.*, 2018:6; Matthews *et al.*, 2014:215). Kenyan HIV-care providers noted that a large number of clients that they need to attend to couple with the already high volume of work leaves little room for the added task of SC (Goggin *et al.*, 2015:655; Mmeje *et al.*, 2016:7). However, the HIV-care providers anticipated that this bottleneck maybe only for a while and mastery with the SC education task over time may reduce the time need to about 10 minutes or less and hence manageable (Mmeje *et al.*, 2016:7). Other barriers to SC education include lack of a private area for the purpose, lack of educational tools, poor access and adherence (Goggin *et al.*, 2015:654-655).

2.7.10.5 Client-related factors

Breitnauer *et al.*, (2015:5) identified from a qualitative study in Kenya client-related barriers to uptake of SC strategies to include lack of awareness of the strategies or inadequate information on the subject stigma, fear of HIV transmission, difficulty with grasping the procedures, lack of partner involvement and cultural undertones and taboos.

2.7.10.6 Safe conception needs of WLHIV

Finoccharia-Kessler and colleagues (2014:4) enquired of reproductive-aged men and women living with HIV about their childbearing needs that limit the risk of HIV transmission to their partners (which is termed SC needs in this study) in Kenya. They found that the SC needs of WLHIV include awareness of the SC strategies to make informed reproductive choices. Most WLHIV express fear of HIV transmission to their partners during an attempt of conception (Carlsson-Lalloo *et al.*, 2016; Mmeje *et al.*, 2016:6; West *et al.*, 2016:4) but generally have limited awareness of SC strategies that can help them minimise the risk (Matthews *et al.*, 2017:3; Schwartz *et al.*, 2014:279).

In a qualitative study that explored WLHIV's knowledge on three SC strategies (unprotected sexual intercourse timed to the peak of fertility; timed vaginal self-insemination; and sperm washing), it was found that most of the WLHIV were ignorant of them. A few had ever heard about them but their knowledge was found to be inadequate for effective utilization. The most familiar strategy was TUI but only 29% (7/28) had knowledge of it. Likewise, only 8% (2/28) were as knowledgeable of VIT as of sperm washing (Finocchario-Kessler *et al.*, 2014:19). Even among the few that seemed familiar with the natural SC strategies, there was an expression of the need to master the skills needed to practice such as the ability to track their ovulation period correctly for unprotected sexual intercourse timed to ovulation (some forget their cycle days while others could not just time the most fertile days) (Finoccharia-Kessler *et al.*, 2014:6; Ngunjiri *et al.*, 2017:55). Their main sources of knowledge were fellow clients, radio, the internet and the newspaper; a few contacted the providers (Finocchario-Kessler *et al.*, 2014:9; Matthews *et al.*, 2013:466). Others also reported low SC knowledge among WLHIV (Saleem *et al.*, 2016:198;

Brown *et al.*, 2016:15; Schwartz, Bassett, *et al.*, 2014:280 *et al.*, 2014:280; Matthews *et al.*, 2013:465; Kawale *et al.*, 2014:4; Ngure *et al.*, 2017:57; Wagner *et al.*, 2017:6).

When WLHIV are equipped with adequate knowledge and skills on SC strategies, and also success story of others who practices the strategies, it would lessen their fears and also help them make informed fertility decisions. It will also prevent seroconversion of their partners (Schwartz *et al.*, 2017; Matthews *et al.*, 2017:4).

Another issue is the need for education on serodiscordance to minimise the ignorance, among WLHIV (Matthews *et al.*, 2014:212) as explained earlier (see section 2.7.2). In a US study, WLHIV expressed confusion regarding serodiscordance, placing a demand on the need for education on subject. It was observed that, the participants found it challenging to believe that they could achieve pregnancy without infecting each other, thus, suggesting they were uninformed about SC strategies (Matthews *et al.*, 2013:465; Finocchiaro-Kessler *et al.*, 2012:3).

Another need of WLHIV is provider-initiated communication which is very key in SC education (Bekker *et al.*, 2011:32; West *et al.*, 2016:5; Davies *et al.*, 2018:26). The need expressed for provider-initiated communication for SC may be due to fear or mistrust for the provider, or anticipated judgmental attitude should they start the conversation or enquire about childbearing (Wagner *et al.*, 2012:514; Mindry *et al.*, 2017:2493). It is established that HIV infection is a stigmatised disease and persons with the condition are discriminated against. Issues of stigma and discrimination have become the leitmotif of most HIV discussions as it is well known that they retard HIV-response severely. They also undermine advances in the fight against the pandemic

and as such have received much attention over the years (Nyblade *et al.*, 2007:342; Piot *et al.*, 2015:172; UNAIDS, 2015a:46; Jungwirth, 2019).

There is ample literature on stigma against reproduction among WLHIV from both the community and the healthcare system which is supposed to protect them (Strode *et al.*, 2012:63; Iliyasu *et al.*, 2017:323; Matthews *et al.*, 2016:5; Wanyenze *et al.*, 2013:6-7; Schaan, 2012:1123; Bujan & Pasquier, 2016:919; Salamander Trust, *et al.*, 2015:26; Ingram and Hutchinson, 2000:130). Conscious of negative attitudes coupled internalised stigma, most WLHIV avoid initiating discussions on their fertility intentions with providers though they acknowledge needing education on SC (Beyeza-Kashesya *et al.*, 2018:8; Matthews *et al.*, 2013:466; Kawale *et al.*, 2014:5) and risk the transmission to have children without it (Matthews *et al.*, 2013:467). They would prefer the providers to start the conversation, thereby giving them the impression that they are welcomed to discuss such issues without the anticipated judgmental attitudes (Orza *et al.*, 2017:32). Also, individualised encounters are preferred as it creates a conducive atmosphere of privacy and also improved interaction as captured from a Kenyan study quote (Mmeje *et al.*, 2016:13):

“The doctor should therefore initiate the discussion and then the patient will then open up to give out information. You cannot just start discussing some of these things before studying the doctor. I therefore believe that the doctor should initiate the conversation. That will encourage me to open up and disclose some of my secrets to him.” (HIV-affected woman, age 34).

However, evidence shows that the much-needed provider-initiated SC education is usually lacking thereby leaving the WLHIV to take the risk of conception uninformed and thus unmet need for SC (Finocchiaro-Kessler *et al.*, 2010:319; West *et al.*, 2016:4; Goggin *et al.*, 2014:998; Kawale *et al.*, 2014:5). The few WLHIV who braved and approached the providers for the discussion met with

discouraging attitudes which deterred them from making the attempt again; they would rather approach a friend or significant others (Kawale *et al.*, 2014:4; Matthews *et al.*, 2012:3).

In addition to the lack of provider-initiated SC communication, is the disrespectful care rendered to WLHIV needing reproductive health services. A global survey of WLHIV regarding their reproductive needs revealed that respect and dignity from HIV-care providers is one of their valued needs for SC. The women expressed that the judgmental attitude including derogatory remarks concerning their reproduction does not only humiliate them but made them feel undignified and contributed to their inability to approach the providers on such issues (Orza *et al.*, 2015:4; Orza *et al.*, 2017:31).

A similar finding was reported from Malawi (Kawale *et al.*, 2015:4). Unfavourable provider attitude and inability to initiate and deliver adequate education on SC strategies were partly attributed to inadequate knowledge and self-efficacy in addition to the absence of provider guidelines (Matthews *et al.*, 2017:4). This places a demand and the need for their training not only on the subject of SC but also on good provider-client relationship dynamics such as good rapport, empathy and respect from providers as well as styles of communication that minimises stigma and promote candour (Kawale *et al.*, 2015:5; Goggin *et al.* 2015:657; Matthews *et al.* 2017:4; Brown *et al.*, 2016:8; Davies *et al.* 2018:4; The Denver Principle, 1983; Tzaneva and Iacob, 2013:183).

Women living with HIV also need assistance with the disclosure of their HIV status to their partners. The cornerstone of preventing HIV transmission and acquisition in serodiscordancy is the awareness of its existence by the partners in the relationship. Therefore, partners must be supported and encouraged to disclose their status, to each other to enable them both to work

towards the prevention of intra-couple transmission (Bishop *et al.*, 2010:8). That is to say that disclosure and fundamental knowledge of horizontal HIV transmission and acquisition are crucial to engaging the support and concerted effort of serodiscordant partners' need for effective SC education and uptake (Matthews *et al.*, 2013:465; Saleem *et al.*, 2017:19). HIV disclosure has both positive and negative consequences for the discloser and the partnership. On the positive side, disclosure relieves stress, improves communication support and safer sex. On the other hand, it can trigger unfavourable outcomes which include violence, stigma, divorce and discrimination both in the family unit, community and the healthcare system (Salamander Trust, *et al.*, 2015:4; Rujumba, *et al.*, 2012:5; Maeri *et al.*, 2016; Atuyambe *et al.*, 2014:5-6). These negative consequences, which disproportionately affect WLHIV makes disclosure difficult for most women (Matthews *et al.*, 2013:465; Crankshaw *et al.*, 2014:5).

In the absence of disclosure, especially for those who desire biological children and want support individually or as a couple; it is a challenging situation for the provider (Mindry *et al.*, 2013:596). It is ideal that providers assist these women with the disclosure process if they so desire. As a 30-year-old WLHIV expresses it "*I feel telling my husband I have HIV is too heavy to come out of my mouth*" (Rujumba, *et al.*, 2012:4). Some WLHIV were reported to have sent their partners to their HIV-care providers for assistance with disclosure (Schwartz *et al.*, 2017:49). There is therefore the need for assistance with disclosure in such circumstances. To do this effectively, the provider must be trained. The provider must be abreast with the appropriate guidelines applicable and educate the woman on the different forms of disclosure viz: personal, mutual, partner notification and guide the woman through her choice. To play this role effectively, the HIV-providers themselves need training in the expertise required (WHO, 2012:38). As providers express

challenge in carrying out SC education without disclosure, it is an indication that SC trainings should address it.

The need for couple education on SC was also identified as a need for WLHIV to be able to practice SC (Kawale *et al.*, 2015: 6-7) since men usually have the upper hand in the issues of childbearing. Considering the crucial role men play in fertility decisions (Matthews *et al.*, 2013: 467), WLHIV who have disclosed should have couple SC education to clarify issues and prevent arguments that may arise with misconceptions about any of the methods (Heffron *et al.*, 2015: 3) especially those which are described as ‘unnatural’ and attract male partner questioning on paternity (Saleem *et al.*, 2016:199). It was also envisaged that couple education would also foster communication between partners which is very vital to the successful uptake and utilization of SC strategies; but male involvement, hitherto, had been a challenge (Crankshaw *et al.*, 2014: 4). Some WLHIV too may encounter challenges with dual counselling because they have not disclosed (Matthews *et al.*, 2012: 4). Adequate training can equip providers to handle effectively, the nuances involved with couple counselling in serodiscordance (WHO, 2012:21).

2.8 HIV CARE PROVIDERS AND HIV CARE

The World Health Organization (WHO, 2006:1) described healthcare providers as people engaged in tasks whose primary intent is to enhance health. In the HIV care continuum, these tasks entail routine, chronic and specific care to different HIV populations at different stages of the disease and they expand across preventive, curative and palliative care. Healthcare providers in HIV care (healthcare workers in this study) have many roles. Specifically, these tasks include health education; counselling and testing; prescription and administration of medications, helping with

activities of daily living, record keeping, supervision, training of other health workers among others in the HIV care continuum (WHO, 2016a:41). This is human resource-intensive and involves providers of different cadres among whom are nurses, midwives, medical officers, pharmacists, laboratory technicians and lay counsellors (Crowley, 2015:2).

Generally, health systems are understaffed with HIV-care providers. The general shortage coupled with an imbalanced skill mix in HIV care is well documented worldwide and SSA is one of the hardest-hit regions (Bärnighausen *et al.*, 2007:808; WHO, 2013:5; WHO, 2016a:41). In the wake of this phenomenon and the constantly evolving paradigms of HIV care, the roles of HIV-care providers are becoming more varied, demanding and requiring new skills especially in the face of task shifting – the rational redistribution of tasks among providers. One of the many strategies often implemented to beef up providers’ performance is training programmes which are geared towards knowledge and skills development, modification of behaviour and improved competence in an identified area (WHO, 2013:215; WHO, 2016a:41).

The usefulness of training providers whether on-the-job or off-the-job is widely acclaimed in most regions of the world including the middle- and lower-income countries located in the Sub-Saharan African region which are staggering under chronic provider shortage, with varying success rates (WHO, 2016b:11, 49; Kulkarni, 2013:137; Jehanzeb, 2013:249). Training programmes are rolled out to reduce the deficit in staff strength, imbalanced skill mix and task shifting which are inherent in the health care system being mobilised to manage the emerging trends of HIV care as well as other diseases (Richter, 2015:105; PEPFAR, 2015:9; Michaels-Strasser *et al.*, 2018:31). It is reported that 250,000 healthcare providers have been trained with the support of the United States

President's Emergency Plan for AIDS Relief (PEPFAR) to improve HIV care worldwide (PEPFAR, 2018:2).

Pawinski and Lalloo (2006:1189) and Naicker (2016:1) also reported successful training programmes carried out to improve different facets of HIV care in South Africa. The same was also reported by Kamiru and his colleagues (2009:1) in Swaziland; Sodhi *et al.* (2014:1) in Malawi; Driessche and his team (2009:2) in Congo and Ezedinachi (2002) in Nigeria. In Ghana, many training programmes in HIV care are reported annually. In 2013 and 2014 alone, participants from over 500 health service delivery areas were trained in PMTCT, early infant diagnosis of HIV and monitoring and evaluation for capacity building in the fight against HIV (GAC, 2014:148; GAC, 2015a:34, 73; Ghana Health Service (GHS), 2015:96). Annual reports churned out usually documents training in HIV and HIV-related care for providers (GHS, 2017:69; GHS, 2015a:94). However, there is information dearth covering training on SC.

2.8.1 Nurses and midwives in HIV care

Nurses and midwives, (collectively referred to as healthcare workers in this study), are one cadre of the frontline care providers in health (WHO, 2017:43; WHO, 2018:2). They constitute over 59% of the global health workforce (WHO, 2020b:37). In the discharge of their duties, they work with individuals, families and communities, in diverse roles which are central in public health and the fight against disease and infection. Usually, they are the first and, at times, the only health professional that persons seeking healthcare may encounter (WHO, 2020:1) and hence the need to ensure they are competent to render quality and accurate services.

A nurse is a person who has undergone the required training in a recognised institution and is licenced to provide services that are geared towards the promotion of health, prevention of illness and alleviation of pain. Likewise, a midwife is a trained, qualified and licenced personnel whose services are directed towards achieving good maternal and child health outcomes (WHO, 2017:10-11). Because they provide services at all levels and settings in the health system, they usually are the connecting link between the people and the health system. They may practice in the hospital, health units or within the communities (WHO, 2017:34). They are critical to the achievement of Sustainable Development Goal 3 – health and wellbeing in the life-course which entails ending AIDS as a public health threat by 2030 (WHO, 2020b:5). It is estimated that an additional 9 million nurses and midwives (henceforth referred to as healthcare workers – HCWs) are needed to achieve this goal (WHO, 2018:3).

As the HIV epidemic keeps evolving, so also is the continuum of care for PLHIV (UNAIDS, 2015a:365). The roles of HCWs, like the other HIV-care providers, also keep evolving and expanding despite the staff shortage. With the introduction of the task-shifting system, they have added roles that have spanned across many aspects of the HIV care continuum and include counselling and testing, screening, diagnosis, treatment, health education and supervision among others (WHO, 2008:52-63). One such aspect of HIV care that is taking on an additional dimension for HCWs in SSA is SC. As reproductive health care is evolving to include routinely, the hitherto unavailable SC education, there is the need to equip HCWs with the necessary knowledge, skills and behaviour to equip them for the task (Matthews *et al.*, 2017:5).

Healthcare workers acquire the body of knowledge and skills necessary for their practice through basic nursing and/or midwifery education (pre-service training), or by continuous professional

development while in the service (Price and Reichert, 2017:10). One of the methods of delivering continuous professional development programmes is in-service training. While education refers to formally organised courses run by higher institutions of learning for relatively long periods (The Health Foundation, 2012:7), training (also called in-service) describes a set of planned and systematic activities of shorter duration, designed to impart knowledge, skills and attitude to a selected group of people to improve their current or future job performance (Management Support Systems (MSS, 2012:52.2)). Mellish *et al.*, (1997:7-9) indicates that both basic education and in-service training constitute nursing education which is a process of assisting an individual to learn the art and science of nursing and apply it effectively to restore, promote and maintaining health.

Though literature from Ethiopia, Ghana, Kenya, Nigeria, South Africa and Uganda echoed the need for HCW training to bridge the gap of poor knowledge, attitude and skills limiting the provision of SC education (Finocchiaro-Kessler *et al.*, 2014:14; Goggin *et al.*, 2014:1001; Goggin *et al.*, 2015:657; Laar, 2013:5; Mindry *et al.*, 2018:32; West *et al.*, 2016:8; Ngure *et al.*, 2017:57; Matthews *et al.*, 2016:6; Matthews *et al.*, 2014:215; Iliyasu *et al.*, 2019a:543), the response has been very slow and few as reflected by the dearth of implementation studies on the subject. The first step to be considered in the preparation to deliver SC education is the development of appropriate and relevant training programme for training the providers (Brown *et al.*, 2016:8). So far, very few SC implementation studies have reported the development of such programmes (Brown *et al.*, 2016:4-5) and piloting training of providers on the subject in South Africa (Schwartz *et al.*, 2017:45) and Kenya (Brown *et al.*, 2016:4-5) successfully. None of such training has been documented from Ghana (Davey *et al.*, 2018:4).

2.9 TRAINING AND THE TRAINING PROGRAMMES

Management Sciences for Health (MSH, 2012:52.2) defines training as a planned activity that is aimed at imparting or modifying knowledge, skills and attitudes to the required level through learning. The set of scheduled courses through which this is achieved is referred to as a training programme. Training has many advantages to the trainee and the organization. At the individual level, it improves the trainee's aptitude, self-efficacy, effectiveness and morale. It also prepares the trainee for the required task. It may also contribute to job satisfaction. For the organization, training solves incompetency challenges and makes available a knowledgeable and skilled workforce that works to meet the needs of society (Kulkarni, 2012:138).

Depending on the location, training could be classified as on-the-job or off-the-job. The former allows the trainee to learn in the work environment by using the logistics regularly available to him. It has the advantage of practising what is learnt where it would be needed at once and thus facilitates positive transfer. It is cost-effective and maintains staff at the post. On-the-job training, however, has the disadvantage of limiting the trainee's scope and experiences to only his environment. It is not advisable when the simulation is necessary and when large numbers are involved. There may also be distractions to the trainee, preventing maximum concentration. Off-the-job training, on the other hand, takes the trainee out of his normal practice environment. Though it is expensive and does not favour on-the-spot transfer of competencies acquired, it is advantageous in the sense that it permits the use of multiple teaching and learning methods and materials (audiovisuals, role play and others) and can be used for a larger group. Training off-the-job also prevents frequent interruptions thereby allowing a conducive learning environment and

makes room for interactions with trainees from other facilities (Kulkarni, 2013:139; Ongori & Nzonzo 2011:189).

Pieces of training could also be delivered online or traditional face-to-face instruction (Brady *et al.*, 2018:434). Each of the delivery methods has its advantages and disadvantages and hence are suitable for different situations. Online training is hailed for convenience, flexibility, individualised learning pace, improved content presentation and sometimes electronic performance support system culminating in improved learner achievement (Anderson, 2018). It however lacks the face-to-face interaction between learners and the facilitator (Potter, 2015:4; Anderson, 2018). Nguyen and Klein (2008:106-107) reviewed the cost-effectiveness of online training and reported findings on the economy of time and improved output to organizations in their study. Online training requires information and communication technologies (ICT) infrastructure as the backbone of the delivery.

The term “information and communication technologies” (ICT) refers to forms of technology that are used to transmit, process, store, create, display, share or exchange information by electronic means. This broad definition of ICT includes such technologies as radio, television, video, DVD, telephone (both fixed-lines and mobile phones), satellite systems, and computer and network hardware and software, as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs” (United Nations Educational, Scientific and Cultural Organization (UNESCO, 2007:1)

The traditional training has the classroom set-up mode of instruction delivery. It has the advantage of live or face-to-face interactions and a sense of community among a class of learners enabling a

collaborative environment to approach learning from different perspectives. It also creates room for learners to have direct responses or clarifications at the time of the instruction (Anderson, 2018) but inflexible compared with online training. The hybrid method (where both online and face-to-face training is blended to varying degrees to match the level of available technology) is an instructional method that gleans from the advantages of both methods as discussed earlier. It improves comprehension, participant interaction and the learning process with a minimal level of technology (Woods *et al.*, 2004:281).

The effectiveness of these methods of training has been debated. A meta-analysis of 50 studies from 1996 to 2008 found that learning performance with online instruction (solely online or hybrid) was better than the traditional face-to-face output. The articles for the meta-analysis covered various programmes of study viz: undergraduate, graduate, medical, nursing and education (Means *et al.*, 2010:18). With these advantages comes bottlenecks that make the adoption of pure or hybrid online training challenging, especially in the developing world.

In most developing countries such as those in the SSA, the continuous availability of ICT infrastructure which is the backbone of online training is not guaranteed. Massing (2017:28) from Namibia and Kisanga and Ireson, (2015:129-130) from Tanzania reported on some of the challenges to the adoption of ICT based training to include poor or limited access to power and internet supply as well as ICT devices and inadequately equipped technical and managerial support. These challenges are not different from Ghana's in adopting ICT-based training programmes. Poor ICT infrastructure has been reported (Natia and Al-hassan, 2015:122; Addy and Ofori-Boateng, 2015: 26). Thus, though one of the six building blocks of effective health

systems is ICT, Ghana is lagging in ICT infrastructure. Irregular electricity supply was also reported as a challenge to the adoption and use of ICT.

In accord with findings from Namibia and Tanzania, the Ghana country summary report on the energy needs-assessment of public health facilities reported that “computers and ICT devices were rarely found, except for cell phone” and more so “most health facilities had poor mobile phone network coverage with the network only accessible only from specific places in the health facility compound” (GHS, 2015b:28). Power supply (electricity and/or solar), especially in the suburbs, were below facility needs and is characterised by frequent outages (GHS, 2015b:18). It is noted that most of public the health facilities are now gradually implementing technology-based record-keeping (de-Graft Aikins and Koram, 2017:377). In the face of these ICT infrastructural challenges, training and training programmes need to be designed in such a way that it can be delivered using the resources available and this allows mostly for face-to-face instructions as ICT challenges are not uncondusive for online or high technology hybrid training programmes (UNESCO, 2007:7).

A training programme is important because it serves as a roadmap, directing the training sessions. It has a schedule of activities to be carried out, training goal (s), learning objectives, topics to be treated, methods of instruction and methods of assessment. It also spells out the details of the facilitators and trainees of the programme (MSH, 2012:52.2). To be effective, programmes must be developed to address the challenges identified during needs assessment that necessitate the training using an acceptable framework (theories, models) to guide the concept, procedure and also link the parts (Bartholomew Eldredge *et al.*, 2016:62-63). It is agreed that using multiple theories or models are advantageous because they offer a wider insight that elicits building robust

programmes (Bartholomew Eldredge *et al.*, 2016:58). Cairney (2013:3) sheds light on the advantages and approaches to adopting multiple theories or models. Three (3) approaches - synthesis, complementary or contradictory - may be adopted in the process of choosing the theories.

For a synthesis approach, the researcher combines the insights from the chosen theories to converge into a single theory which is then used. While it draws multiple perspectives from the selected theories, there is the issue of compatibility of the new constructs generated through the synthesis and also internal consistency that must be navigated. The complementary approach allows the researcher to generate a series of perspectives from each of the selected theories which are then used to explain or guide different aspects of the programme. It has the disadvantage of not allowing a deeper application of the theories. The third approach allows the choice of one theory after much comparisons. However, this is done after a range of theories are selected with their associated research agenda and then a way is found to compare them considering the prevailing context of use. The best suited theory under the circumstance is then chosen after the various insights might have been thoroughly compared and contrasted (Cairney, 2013:3). The chosen theories provide the frame for structuring the components of the training programme such as the courses to be introduced, sequencing, learning tasks, training methods and modes of instruction and the programme assessment tools (Bartholomew Eldredge *et al.*, 2016:58; I-TECH, 2010:1).

2.10 CHAPTER SUMMARY

Before the advent of the ARVs, poor maternal and paediatric outcomes of childbearing attempts in WLHIV justified the resistance of medical society against childbearing among WLHIV.

Presently, many laudable milestones have been achieved in the HIV response, with the many behavioural, biomedical and structural HIV prevention intervention. In reproductive health, mother-to-child transmission has reduced drastically and viral suppression achieves both primary and secondary HIV prevention. However, peri-conception HIV prevention among WLHIV and their partners has received little attention.

Though childbearing among WLHIV is a right, it is not only deprioritised but also stigmatised and discriminated against on the basis of the risk of vertical and horizontal HIV transmission. This risk can be minimised with the provision and uptake of SC strategies but poor knowledge, skills and attitude among HCWs limit its implementation. The increasing fertility desires and intentions, increasing childbearing as well as the incidence of seroconversions/superinfections on account of childbearing put demand on SC implementation. In addition, the implementation of pre-test successes reported alongside the observed feasibility, acceptability and uptake of safe conception strategies further emphasise the unmet need for SC education.

Considering the prevalence of serodiscordance and its significant contribution to new HIV infections, addressing seroconversions through childbearing cannot be overlooked. Training programmes can help bridge the gap on the challenges of HCWs inadequacies and facilitate the implementation of SC services for WLHIV and thereby facilitating the uptake of SC strategies to prevent HIV incidence.

SECTION TWO: EMPIRICAL STUDY

Section two presents the needs-assessment which is contained in intervention mapping (IM) step one. This first step allows the investigator to carry out a needs-assessments and gain insight into the health problem under study. The determinants of the problem detected as a result of the empirical study will inform the actions of the subsequent steps and as such the planning an intervention to remediate it.

The section features the assessment of knowledge, attitude, self-efficacy and interest of HCWs towards SC education of WLHIV. The exploration of the SC needs of WLHIV is also reported here. The section unfolds in three chapters viz: three, four and five. Chapter three cover the methodology of both the quantitative and qualitative studies as they form phase one of the study. Chapter four unfolds with the findings, discussion and conclusion of the quantitative segment of the study which bear on HCWs. The last chapter of this section also presents the findings, discussion and conclusion drawn from the exploration of the SC needs of WLHIV. The findings from these investigations were fed into the development of the SCTP in section three.

CHAPTER THREE: METHODOLOGY OF THE STUDY

3.1 INTRODUCTION

This chapter discussed the methodology and methods that were used to achieve the objectives set out for the study. It also discusses the choice and justification for the intervention study design, the framework of intervention mapping, the strategies of data collection and analysis used and how they were affected. Further, it also explains the worldview of the researcher that informed and grounded her choice of methodology, theoretical framework and methods. This methodology section applies to the needs assessment phase only, thus, the step one of the study project. It covers objectives one and two only

For the purpose of clarity and logical structuring of the thesis, the methodology sections for objectives three and four are presented differently. Objective three is about design and development of the SCTP. Therefore, the methodology segment of this objective is presented under section three (chapter six) where the development of the SCTP is described. Likewise, the methodology segment of objective four is presented under section four (chapter seven) where the piloting of the SCTP is described. This is because objective four is about piloting of the SCTP .

3.2 PHILOSOPHICAL FOUNDATION OF THE STUDY: PARADIGMS AND METHODS

Research is a systematic process of investigation that aims at answering a question or solving a problem (Polit and Beck, 2017:33) In the research process, the purpose driving the study is directed by fundamental and interconnected constructs that Crotty (1998:2) termed the elements of the research process. These elements include ontology, epistemology, theoretical perspectives, methodology and methods which inform one another. These interconnected elements represent

levels of decision making that guide the research process (Creswell, 2014:54; Creswell and Creswell, 2018:21)

3.2.1 Elements of the research process

Ontology refers to the study of the nature of the existence of knowledge (Gray, 2014:19) or “the study of being” (Crotty, 1998:10). While a school of thought believes that knowledge exists independent of humans, waiting to be discovered (realism), another (relativists) holds the view of the existence of multiple realities with different ways of assessing them. For each of these schools of thought, the means of understanding or knowing what exists, termed epistemology, differs. Thus, epistemology refers to how ‘what exists’ should be studied (Gray, 2014:19). Hamlyn (1995:242) (as cited in Crotty, 1998:8) states that epistemology is about “the nature of knowledge, its possibility, scope and general basis”. Thus, epistemology enshrines the origin and the nature of knowledge, its development, the connection between the knower and what is known. Ontology and epistemology are interdependent and can be combined (Sparkes and Smith, 2014:10; Crotty, 1998:8) asserts. Epistemology provides a philosophic grounding for evaluating whether knowledge is legitimate, adequate and possible (Crotty, 1998:8; Gray, 2014:19). Some forms of epistemology include objectivism, constructionism and subjectivism. It informs a theoretical perspective. Epistemology informs theoretical perspective (Gray, 2014:19).

Theoretical perspective, also referred to as ‘worldview’ (Creswell, 2014:35) or ‘paradigm’ (Polit and Beck, 2017:42) refers to the guiding principles that govern all the actions of the researcher in a process of enquiry (Creswell, 2014). Creswell (2014:36) sees it as a researcher’s general philosophical inclination about the world and nature of research. Mark (2010:5) states the

ontological and epistemological assumptions constitute a paradigm. Gray (2014:23) outlines theoretical perspectives to include positivism, interpretivism and pragmatism among others. Crotty (1998:7) and Cresswell (2014:35) asserts that a researcher's theoretical perspectives are the basis for the assumptions that underpin and direct his methodology and methods in a research process.

Methodology refers to the plan of action that grounds the choice of methods and techniques that are adopted (Sileyew, 2019:2; Crotty 1998:3) to achieve the purpose of a study. Cresswell (2014:54) calls it the "process of research". It may be seen as the framework within which the tools and methods of enquiry sit. Some methodological designs listed by Creswell (2014:35) include quantitative (e.g., experimental designs and surveys), qualitative (e.g.: ethnography and case study) and mixed-method designs (e.g. convergent and explanatory sequential). The chosen designs inform the techniques and process that can be used to collect and analyze data termed methods (Brown and Dueñas, 2020:546; Crotty, 1998:3). It is seen, therefore, that an epistemological stance underpins the theoretical perspectives of a researcher which grounds his choice of methodology which translates into the methods adopted for an inquiry.

Thus, these four interrelated elements are inherent in every research process and inform the decisions and actions of the researcher (Brown and Dueñas, 2020:546; Crotty, 1998:2-3). It is appropriate that these elements be declared for every research to form the basis of the evaluation of the knowledge produced (Brown and Dueñas, 2020:546; Crotty 1998:2) asserts that. Declaring one's stance (ontological, epistemic and theoretical) also helps others to evaluate the knowledge produced in the light of the corresponding underpinning assumptions (Crotty, 1998:2; Gray, 2014:19). Boucher (2014:2319) defines *stances* as "perspectives or ways of seeing things".

Chakravartty as cited by Boucher (2014:2326) analogised stances to policies. According to this analogy, stances like a policy can allow or deny a researcher the adoption of methodologies and hence methods in the generation of research outcome.

3.2.2 Some paradigms of the research process

There is a prolonged debate on these stances among philosophers (Creswell, 2014:35). The different ontological stances by philosophers have generated much debate about the perspectives of what exists or reality and subsequently, how this existence should be studied (epistemological stance). These differences are also reflected in the different theoretical underpinnings that are at the background of studies from these different schools of thought on the subject matter. Common theoretical stances discussed in the literature include positivism (and postpositivist), interpretivism, constructivism, transformatism/ emancipatory and pragmatism (Creswell, 2013:37). At the extreme ends in this debate on theoretical stances are the positivism and interpretivism schools of thought.

At the first end, the positivist stance (one of the oldest) stresses the existence of objective reality independent of the human mind and behaviour (realism) which must be empirically studied using robust quantitative methods based in rigorous theories. Its epistemological stance is objectivism. I consider the research as external and separate from the research process. It employs control over the context of study and adopts statistical analysis of data. This paradigm is veered towards generalization of study findings and as such useful when precision and prediction are needed (Creswell, 2014:36 – 37; Polit and Beck, 2017:43).

Though the positivist stance is the basis for many empirical types of research (Creswell, 2014:41), it is defective in studying such things as social interactions and other situation that are multifaceted, non-linear and unstable (for example learner-teacher relationships which cannot be effectively quantified) (Kivunja and Kuyini, 2017:36, 2010:8). Polit and Beck (2017:43) noted that the strict positivist's assumption of the existence of absolute reality and truth that can be studied objectively and known is challenged as some social situations cannot be investigated in such a manner. This realization birthed the postpositivist stance. The post-positivist stance still holds a belief that reality exists. However, it is understood that absolute objectivity in research enquiries is impossible.

At the other extreme and opposite end of the post positivism paradigm is the interpretivism theoretical stance (Gray, 2014:23) which is concerned with the meaning making of the world or existence based on the subjective in-depth examination of the phenomenon of enquiry. This stance has the ontological view that knowledge is developed by meaning-making through an act of observation and interpretation, hence, knowledge is not independent of humans. It seeks an in-depth understanding of issues under study with small but information-rich samples. The researcher is much a part of the research process and as such the enquiry is subjective (Polit and Beck, 2017:43). Interpretivism is closely associated with constructivism in epistemology. Believers of this stance hold the view that natural reality and social reality are different hence need to be studied differently using different methods (Gray 2014:23). Gray further asserts that this stance does not stand alone but is a constellation that includes symbolic interactionism, phenomenology, realism, hermeneutics and naturalistic inquiry.

In-between the extreme opposing ends in the debate of philosophical assumptions is the stance of pragmatism. As a paradigm of the middle, it does not submit to one school of thought on ontology

and epistemology; emphasis is laid on the ability of an ideology to achieve the task at stake. The pragmatism stance holds the basic tenet that the research question must direct the research process. As such, emphasis is on employing methods that best answer the research question. Thus, pragmatist researchers employ both objective and subjective methods to answer their research questions (Polit and Beck, 2017:1013).

3.2.3 Choice of the paradigm for the study

After considering and reflecting on both the strengths and weaknesses of the various paradigms generally and in light of the research question posed in this study, the researcher identified with pragmatism. Hence, the researcher's epistemological stance for this study was that of pragmatism. The researcher holds the view that there are multiple realities or existence and as such there are different ways of interpreting them. The researcher also holds the belief that the different phenomena of society lend themselves to different methods of enquiry. As such, the nature of a research purpose or question determines the appropriate methodology for that matter the procedures and techniques that can produce the desired outcome (Creswell, 2014:294). Thus, combining the appropriate quantitative and qualitative methods of enquiry will consolidate the advantages of breadth and depth that are associated with the two.

3.3 THEORETICAL FRAMEWORK OF THE STUDY

Information, motivation and behavioural skills theory (IMB theory) was used for this study. The IMB theory developed by Fisher and Fisher (1992:465), has its basis in understanding and promoting HIV health behaviour as well as other health behaviours (such as medication adherence, and breast self-examination). With its roots in social and health psychology, the IMB model has

the assumption that its three constructs namely HIV prevention information, motivation and behavioural skills are the fundamental determinants of HIV preventive behaviour (Fisher and Fisher, 1992)

3.3.1 Components of the IMB model

The HIV prevention information entails information that is of direct relevance to the HIV prevention behaviour and can be easily translated into the desired behaviour within the context of the individual. This information is necessary and a prerequisite for performing the HIV preventive behaviour (Fisher and Fisher, 2002:40). Besides, individuals may have some HIV prevention heuristics (usually incorrect and negatively related to HIV preventive behaviour) which they use to quickly decide whether they would engage in HIV preventive behaviour or not.

Similarly, HIV prevention motivation to engage in HIV preventive acts translates into two dimensions namely personal motivation and social motivation. The former is about personal attitude and inclination towards carrying out specific preventive acts that are known to prevent HIV (Fisher and Fisher, 2003:85). Ajzen (1991:188) thinks of attitude as an appraisal of behaviour that may place it in a continuum ranging from favourable to unfavourable. Social motivation, on the other hand, refers to perceptions and beliefs an individual has of his/her significant others' support or otherwise of the specific HIV preventive measures in question. It is dependent on one's appraisal of society's support or otherwise of the practice of the HIV preventive behaviour (Fisher and Fisher, 2002:46). Motivation influences whether individuals with adequate HIV preventive information will be inclined to carry out what they know to prevent HIV.

The third determinant is behavioural skills for performing the HIV preventive acts. It includes an individual's objective skills for carrying out such acts and a sense of self-efficacy to do so (Fisher and Fisher, 1993). It is also a prerequisite and helps determine whether well-informed and highly motivated individuals will be capable of carrying out HIV preventive behaviour (Fisher and Fisher, 2002:46).

The IBM model specifies that information and motivation work through behavioural skills to influence behaviour change (as illustrated in Figure 3-1). Thus, information and motivation are expressed through the use of behavioural skills that are necessary for initiating and maintaining the desired behaviour change. Information and motivation may each influence behaviour change directly. However, in cases of uncomplicated and normal routines, prevention information and prevention motivation may directly affect prevention behaviour without finding expression through prevention behavioural skills. Also, prevention information and motivation are generally independent as an adequately informed individual may not be motivated to practice prevention just as a well-motivated individual may also not be adequately informed about prevention (Fisher and Fisher, 2002:47).

Three phases are involved in the application of the IBM model. These are the elicitation, intervention and evaluation phases. The elicitation phase is aimed at assessing the target population's pre-intervention levels of information, motivation, behavioural skills and HIV preventive behaviour (through a representative sample) to determine the deficits that need bridging to inform the development of an intervention in the second phase. Both qualitative and quantitative methods are approved for the assessment. For the intervention phase, the programme is developed to address the identified deficits in HIV prevention intervention, motivation, behavioural skills and

behaviour. The evaluation phase entails assessing the programme rolled out for the desired effects (Fisher and Fisher, 2002:47).

The IMB model has been used for many intervention studies geared towards HIV risk reduction (Fisher and Fisher 1992). Though the IMB theory had been propounded specifically to promote condom use in the prevention of HIV transmissions and other HIV preventive behaviours, it has been used extensively and successfully in planning other interventions in different settings around the world (Fisher and Fisher, 2002:44). A review on the use of the model by Fisher *et al.*, (2006:466) in ART adherence studies revealed its application in over 90 studies some of which were in Puerto Rico (Amico, Toro-Alfonso and Fisher, 2005:664), South Africa (Kiene *et al.*, 2013:5), Mexico (Torija *et al.*, 2015:336), Italy (Starace *et al.*, 2006:153) and US (Amico *et al.*, 2009:4; Fisher *et al.*, 2011:1636). It has also been used in drug adherence in diabetes mellitus (Mayberry and Osborn, 2014:1247), predicting breast self-examination (Misovich *et al.*, 2003:775) and motorcycle safety gear behaviour among motorcycle riders (Fisher and Fisher, 2002:60). It has also been applied to multiple populations such as intravenous drug users, adolescent contraception and risky behaviour, and homosexuals (Fisher and Fisher, 2002:40). Woldetsadik and colleagues (2016) had also used it in the development of a psychometric tool for assessing knowledge, attitude and beliefs towards SC counselling among clients and HIV-care providers in Uganda. The model has also been successfully used in several doctoral theses including these which examined ART adherence (Zelege, 2015); sun protection for skin cancer patients (Nahar, 2016) and childhood obesity (Bartholmae, 2016).

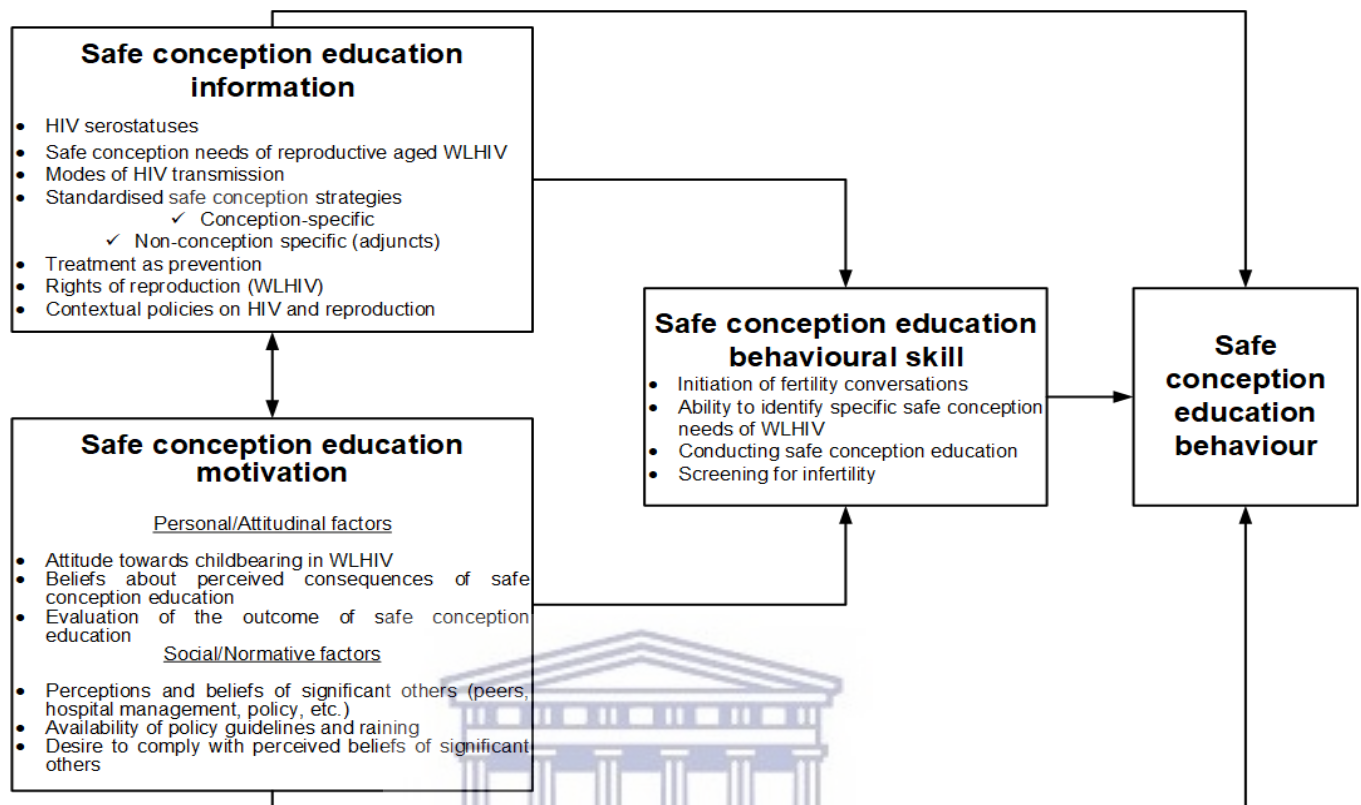


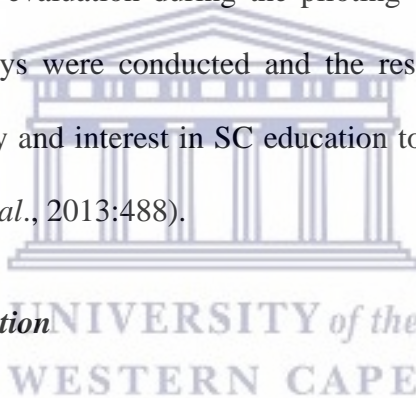
Figure 3-1: The IMB model adapted for safe conception education. *Source: Adapted from W. A. Fisher et al., (2003:98).*



3.3.2 Application of the IMB model

In this study, the IMB has been applied to HCWs' education of WLHIV on a SC which is the HIV prevention behaviour. If HCWs adopt SC education of WLHIV, the women will be informed to conceive safely thereby minimising horizontal HIV transmission and acquisition (Schwartz *et al.*, 2014:283; Barreiro, 2006:325). For nurses and midwives to carry out SC education successfully, they need to have an understanding of SC as a risk reduction strategy in HIV prevention and be equipped with accurate and necessary information on the subject, be motivated to carry out SC education, be equipped with the requisite skills and the self-efficacy for conducting SC education (Matthews *et al.*, 2017:5).

With this understanding, the researcher used the IMB model to inform her measures. The researcher examined the participants' knowledge, attitude, self-efficacy and interest regarding SC education during needs assessment and piloting of the SCTP. For the baseline, a survey was conducted during needs assessment to determine the levels of HCWs' knowledge, attitude (motivation), self-efficacy and interest to conduct SC education. The information that they had on the subject was termed “knowledge”, their predisposition to SC education was termed “attitude/motivation”, their perceived capability to conduct SC education was “self-efficacy” and interest to conduct SC education as a proxy for behaviour change which was also the outcome of interest. This also holds for the evaluation during the piloting of the SCTP when the pre-and immediate post-workshop surveys were conducted and the researcher examined participants' knowledge, attitude, self-efficacy and interest in SC education to determine the effectiveness of the SCTP developed (Hackler *et al.*, 2013:488).



3.3.2.1 Safe-conception information

This requires knowledge on peri-conception HIV transmission, acquisition, vulnerabilities and risky behaviours, dynamics of serostatuses (serodiscordance and seroconcordance), fertility desires and intentions, SCs strategies, reproductive rights of WLHIV and policies guiding HIV care in their setting of work (Morton *et al.*, 2017:17; Davies *et al.*, 2018:2; Bekker *et al.*, 2011:32; WHO, 2012:138; Matthews *et al.*, 2009:7-9). Safe-conception-related heuristics may be incorrect (such as the notion that if WLHIV is educated on SC, they may misappropriate it by getting pregnant when they should not. There is a misconception among HIV-care providers that SCE of WLHIV also mean endorsing indiscriminate childbearing and enticing them to bear children which

may lead to nurses and midwives hoarding the information – West *et al.*, 2016:4) that may cause them to behave differently.

3.3.2.2 Safe-conception-related motivation (attitude)

These are based on the following two concepts: personal motivation (attitude) and social motivation. Personal motivation has got to do with the HCW's attitude towards childbearing in WLHIV and subsequently their attitude towards SC education and its outcomes. Being part of the larger community, HCWs stigmatise childbearing in WLHIV (Iliyasu *et al.*, 2017:323). They believe that WLHIV may exhibit risky behaviours and seroconversion may be blamed on them. In such situations, the HCWs believe they would then be contributors to such occurrences (Finocchiaro-Kessler *et al.*, 2014:8, 13; Goggin *et al.*, 2014:8).

Others believe the women might die and leave the children orphans thereby burdening the government, families and the children themselves. Others also have the notion that they have the onus to protect partners of WLHIV and their unborn children from HIV and to achieve that they must dissuade the women from having biological children (Chadwick *et al.*, 2011:150; Matthews *et al.*, 2014:214; Goggin *et al.*, 2015:656; West *et al.*, 2016:7). Favourable beliefs drew positive responses from HCWs. One of such is the cultural belief that every woman should be a mother, hence, WLHIV who are primips should be helped to have at least a child (Matthews *et al.*, 2016:4-6; Kawale *et al.*, 2015:3). In the face of these variations in the attitude of HIV-care providers towards childbearing among WLHIV, it is ideal that programmes are instituted to redress the identified deficits in order to make a positive impact on SC education (Matthews 2017:5; West *et al.*, 2016:8).

3.3.2.3 Safe-conception behavioural skills and Self-efficacy

Safe-conception behavioural skills focus on the ability of the HCW to perform those tasks constituting SC education efficiently. Safe conception self-efficacy refers to the HCW's confidence regarding the efficient performance of those tasks (Fisher and Fisher, 2003:87). The tasks include initiating communication on safe conception, screening for and identifying persons needing SC education; providing information on SC strategies, calculating peak fertility period for WLHIV, monitoring client through SC practice, communicating effectively and respectfully with WLHIV. It also includes assisting WLHVI with or without their partners to choose SC strategies appropriate to their serostatus (Davies *et al.*, 2018:10-15; Schwartz *et al.*, 2017:44).

3.3.3 Justification for choosing the IMB model

A theoretical framework is a structure that guides a study as it influences every aspect of the study. It is made up of a selected theory unto which the topic of interest in a study is conceptually mapped forming a framework that represents a blueprint for the research (Grant and Osanloo, 2014:13). The selected theory for this study is the IMB model. Being a preventive model, it was conceptualised and developed with HIV prevention in mind and as such, the constructs are representative of HIV prevention programmes; an example of which is the SC education. Further, the model was conceptualised to address limitations found in other relevant theories. It outlines the relationship among constructs and includes behavioural skills construct which improves understanding of health behaviours. The constructs are easily comprehensible, important to health behaviour and parsimoniously explanatory without (Crosby *et al.*, 2002:9; Kegler *et al.*, 2002:387).

A review of the literature revealed the consensus among an increasing majority of HIV reproductive health experts, that inadequate HIV-care provider knowledge, attitude, behavioural skills and self-efficacy are the determinants of the poor SC education for PLHIV (Davet *et al.*, 2018:6; Matthews *et al.*, 2017:5). These determinants are congruent with the IMB model as well as with the cognitive, affective and psychomotor domains of training HCWs (WHO, 2014:6; WHO, 2016c:11). Even so, the model does not only make room for a theoretical framework but is also a roadmap for needs assessment, and the context-specific HIV prevention programme development through its *elicitation, intervention and evaluation phases* making it appropriate for the SCTP. Further, the model's phases synchronise well with the steps of the overarching framework (intervention mapping) which is also about programme development but in much more detail. The intervention mapping step one requires a theory-based needs assessment which the IMB provides. The IMB model therefore seamlessly dovetails with the intervention mapping framework seamlessly. Like the intervention mapping, the model also makes room for the use of both qualitative and quantitative methods (Fisher and Fisher, 2002:48) to improve their compliance.

3.3.4 Critique of the IMB model

The IMB model is a parsimonious and comprehensive conceptual model for understanding health behaviours and their determinants with extensive application across a diverse population. However, it has some limitations. Like all other theories or models of behaviour, the IMB model is only a conceptualization of behaviour but does not determine how people behave. Hence, it cannot account for all the complexities that can be found with behaviour but rather point to some of them to guide the researcher's thoughts through research activities. Similar to other models, the

IMB does not differentiate the subjects in studies and therefore, it must be adjusted to suit a chosen research target. Lastly, though the IMB model has conceptualised its constructs as antecedents to behaviour change, there are situations where such changes occur without them as precursors (Darnton, 2008:19). Despite these limitations, the model helped to create a training programme that is responsive to the identified training needs of HCWs as it is consistent with the training domains of HCWs which are the cognitive, affective and psychomotor.

3.4 RESEARCH METHODOLOGY

Research methodology is an action plan depicting how the researcher practically conducts a study to obtain an answer for a research question (Brown and Dueñas, 2020:548; Crotty, 1998:3). It is “concerned with why, what, from where, when and how data is collected and analysed” (Scotland, 2012:10). It also discusses the choice and use of study designs, methods, processes and techniques for collecting data and analysing it to achieve the purpose of the study. In this chapter, an overview of the research design is presented, followed by the methods used.

3.5 RESEARCH DESIGN

An intervention research approach was adopted for the study. Intervention research is a type of applied research characterised by the design and the development of purposive change strategies or tools, termed interventions, based on identified problems. Intervention research yields results (interventions) that have practical application for practitioners as well as for other stakeholders. The interventions developed need piloting for refinement (Fraser and Galinsky, 2010:459; Rothman and Thomas, 1994:3). The researcher found the intervention research appropriate because its framed and systematic structure leads to the development of a product (in this study, a

SC training programme) that can be put to practical use. In this study, the product which is the SCTP, is an answer to the researcher's research question. Both cross-sectional surveys and qualitative exploratory designs were employed in the development of the SCTP. The qualitative exploratory design enabled the researcher to get the emic perspectives of the WLHIV with regards to what constitutes their SC needs during the needs-assessment and pilot evaluation stages of the study. The cross-sectional survey made the researcher gather factual information on the knowledge, attitude and self-efficacy of the HCWs regarding SC education of WLHIV before and after piloting the SCTP. It ascertained the fact-finding aspect of the study.

The intervention mapping (IM) protocol was adopted as the overarching methodological framework which housed both the quantitative and the qualitative designs (the research process), provided the roadmap for feeding the study findings into the SCTP development as well as guided the procedure. Intervention mapping was employed because it provided a systematic theory- and evidence-based methodological framework into which the objectives of this study fitted well. Further, the six steps of the model offer a step-by-step guide through the stages of intervention development which was the aim of this study. A feature of the model whereby the completion of specific tasks in each step created a product that fed into the subsequent ones made the process seamless and integrated (Bartholomew Eldredge *et al.*, 2016). Thus, each of the six steps of the IM feeds into one another and can become cyclical. The steps are described as follows:

Step 1: Logic Model of the Problems (needs-assessment)

This first step allows the investigator to carry out a needs-assessment and gain insight into the health problem under study. The behavioural and environmental determinants of the problem

detected as a result of the analysis will inform the actions of the subsequent steps geared towards planning an intervention for remedy (Bartholomew Eldredge *et al.*, 2016:14).

Step 2: Programme Outcomes and Objectives

These are formulated when the planner determines who and what should change based on the health problems identified in the first step as an interim objective thereby guiding the intervention (Bartholomew Eldredge *et al.*, 2016:15).

Step 3: Programme Design

The programme design stage requires that appropriate theories, whose constructs stipulate how health problems identified can be managed at the ecological levels, are used to guide the development of programme activities to facilitate behaviour change. Thus, evidence-based methods that suggest how the desired change may occur in a target population are adopted to inform strategies that help meet proximal programme objectives formulated at the second step (Bartholomew Eldredge *et al.*, 2016:17).

Step 4: Programme Production

At this stage, the evidence-informed strategies are packaged into a programme with the description of the scope and sequence of the intervention components. The programme materials and protocols are completed and are tested with the programme implementers and recipients (Bartholomew Eldredge *et al.*, 2016:18).

Step 5: Programme Implementation

Theories are again adopted to formulate strategies that facilitate the adoption of the programme. At the end of this step, a detailed plan is drawn to steer adopting and implementing of the programme, applying theory-based methods and strategies to solving the problem, and programme production (Bartholomew Eldredge *et al.*, 2016:18).

Step 6: Programme Evaluation

An evaluation plan is completed specifying indicators and measures of assessment to measure the outcome and impact (Bartholomew Eldredge *et al.*, 2016:19).

3.5.1 Application of the intervention mapping to the study

Though intervention mapping has six steps, in its application to this study, only the first four steps were employed. These were needs assessment, developing programme objectives, identifying theory-based strategies for solving the identified problems and developing the programme for the intervention. This is because these four steps will address the objectives outlined for the study as shown in Table 3-1.

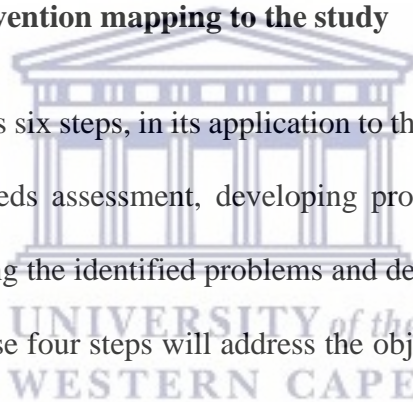


Table 3-1: Adapted intervention mapping steps and tasks

Stage of study	IM Step	Activities
1	Step 1: Logic model of the problem	<ul style="list-style-type: none"> (a) Establish and work with a planning group (b) Conduct needs-assessment for SC (c) Describe the context for the intervention (elicitation phase of IMB theory) (d) State programme goals
2	Step 2: Programme outcomes and objectives	<ul style="list-style-type: none"> (a) State expected outcomes for behavioural change (b) Specify performance objectives (c) Select determinants for behavioural outcomes (d) Construct matrices of change objectives (e) Create a logic model of change
3	Step 3: Programme design	<ul style="list-style-type: none"> (a) Generate programme themes components, scope and sequence (b) Choose theory- and evidence-based change methods (c) Select or design practical applications to deliver change methods (Nominal Group Technique)
4	Step 4: Programme production	<ul style="list-style-type: none"> (a) Refine programme structure and organization (b) Prepare plans for programme materials (c) Draft messages, materials, and protocols (d) Pilot the programme (e) Refine and produce materials
These steps (5 and 6) were not applied in this study	Step 5: Programme implementation	<ul style="list-style-type: none"> (a) Identify potential programme users (adopters, implementers and maintainers) (b) State outcome and performance objectives for programme use (c) Construct matrices of change objectives for programme use (d) Design implementation interventions
	Step 6: Evaluation	<ul style="list-style-type: none"> (a) Write effect and process evaluation questions (b) Develop indication and measures for assessment (c) Specify the evaluation design (d) Complete the evaluation plan

Source: Bartholomew Eldredge *et al.* (2016:13)

3.6 THE STUDY SETTINGS

Ghana is one of the West African countries situated north of the Guinea Coast. It shares borders with Burkina Faso to the north, Togo to the east and on the west, Côte D'Ivoire. Its total land area is 238,537km (WHO and Alliance for Health Policy and Systems Research, 2017:6). The country is divided into administrative regions, one of which is the Volta Region, the setting for the study. Until 2018, Ghana had ten regions. However, additional regions were created resulting in a total of 16 regions (Amenyo, 2019) (reflected in Figure 3-2). The Oti Region was carved out of Volta. However, Oti Region is barely a year old and is yet to have its archives for authentic information. The region is yet to wean off, especially regarding health services and the generation of reports. Based on these reasons, coupled with the fact that the research commenced before the region was divided into two, the researcher described the setting lumping the two together as the Volta Region. Before its division, the Volta Region was situated between latitude 5° 45'N and 8° 45'N along the southern half of the eastern border of Ghana. It shared boundaries in the north with the Northern Region, the south with the Gulf of Guinea, in the west with Greater Accra, Eastern and Bono East Regions. To the east, Volta shared boundaries with the Republic of Togo. Its land area was 20,570 square kilometres which are about 8.7% of the total land space of Ghana. It used to be part of the Trans-Volta Togoland but was merged with current Ghana after independence. The Abidjan – Lagos Corridor, a subsection of the longer Darkar – Lagos Corridor pass through the southern part of the region. This corridor is part of the Trans African Highway Network in the ECOWAS region. It is one of the important corridors frequently assessed for communicable diseases including STIs/HIV/AIDs (African Development Fund, 2016:iv, 3).



Figure 3-2: The map of Ghana showing all 16 regions

Note: Oti and Volta regions – extreme lower right - used to be one prior to the demarcation

The Volta Region was regarded as the microcosm of Ghana as it spans the length of the country and features all its ecological zones and ethnic groups (Ghana Statistical Service (GSS), 2013:1). Its population was 2,118, 252 in 2010 with annual growth and total fertility rates of 2.5% and 3.2 children per woman respectively (GSS, 2013:24, 79). The projected population for 2017 was 2,549,256 (GHS, 2019:1). Females constitute 51.9% of the total population (GSS, 2013:3). The total fertility rate for women of reproductive age (15-49) was estimated at 3.2 children on average with an incline in the rural areas.

The most populated municipality was the capital Ho, followed by Hohoe. The least populated being South Dayi. There were eight major ethnic groups which could be divided into 62 sub-groups. Ewes, Gurmas, Guans and Akans respectively were the most dominant. Christianity was the leading religion followed by the traditional and then the Muslim faith. For the region as a whole, more than two-thirds could read and write. Over two-thirds of the adult population in the Volta Region (15 years and above) were engaged in one economic activity or the other. Over 72% of this population worked in the informal sector. Agriculture, mainly crop farming, animal rearing and fishing were the major economic activity for both male and female. The region was governed by both the government and traditional authorities (GSS, 2013).

The Volta Region had 18 administrative municipalities and districts which were endowed with many amenities. With regards to education, the region had four universities, various tertiary institutions (nursing training schools and training colleges of education) and over 3000 lower-level educational facilities for formal education. There were 731 health facilities of which 30 were hospitals. These hospitals were made up of 1 teaching hospital, 17 municipal/district hospitals among others. The hospital ownership maybe government, CHAG (Christian Health Association of Ghana) owned or private (GHS, 2019:17). The rest were lower-level facilities such as clinics and health centres and CHPS (community-based health planning and services) compounds and maternity homes. Except for three districts, every district had at least one hospital (GSS, 2013:6). Of these hospitals, 22 had ART Units as of 2016, which rendered health services to PLHIV excluding antenatal and six-week postnatal health services (Volta Regional Health Directorate (VRHD), 2018). These ART units, referred to in this study as the ‘traditional’ ART units, were the

sites for this study. As of 2018, almost all health facilities were being prepared to offer ART services.

3.6.1 The study sites

The research was initiated in the 22 ‘traditional’ ART units within 22 hospitals in the Volta Region. One private hospital opted out. Hence, the study took place in the remaining 21 hospital facilities which function at the primary and secondary levels of care. The study was in the final stages of completion when the Regionals Hospital (at the secondary level of care) was converted to a Teaching Hospital (tertiary level status) in 2019. As of 2017, these were the hospitals with ART units and were rendering HIV services to the people within the region. They were therefore termed ‘traditional’ ART units in this study. There were 40 functioning ART units as of 2017 (VRHD, 2018).

The Ministry of Health (MOH) provides the overall policies and direction while the Ghana Health Service implements them. Service delivery is under the latter. Health service delivery is grouped into three tiers named primary, secondary and tertiary which matches the nation’s administrative levels at the district, regional and national levels respectively (GSS, MOH and ORC Macro, 2003:18 – 20; Awoonor-Williams, 2016:3) as shown in Figure 3-3.

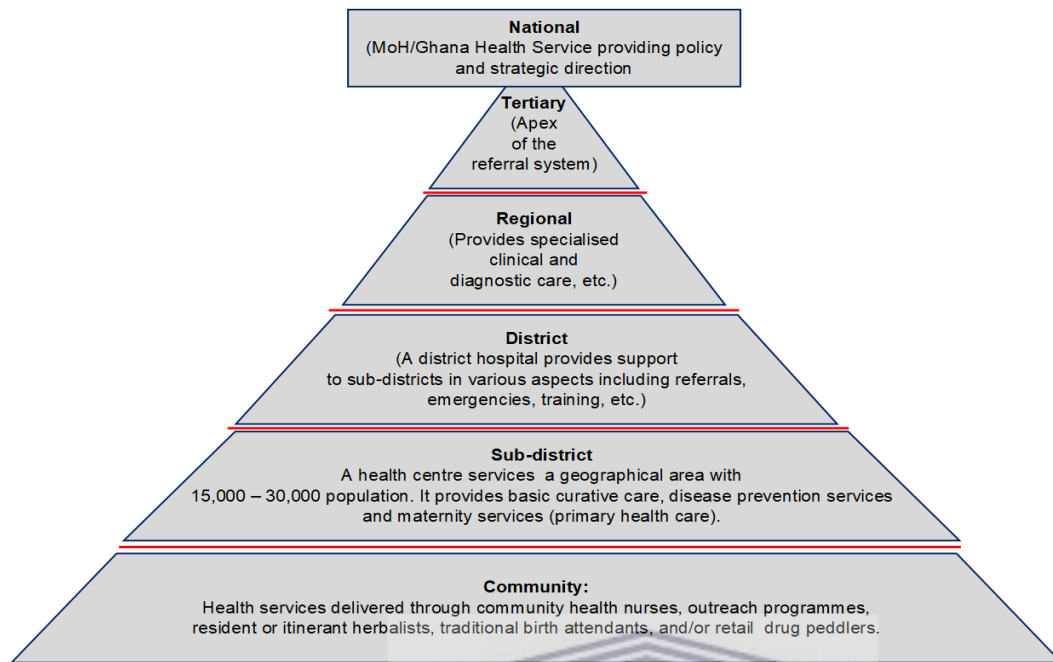


Figure 3-3: Structure of service delivery in Ghana Health Service. Source: Awoonor-Williams *et al.*, (2016:3).

In hierarchical order, CHPS compounds and the health centre are the lowest level of healthcare delivery at the sub-district level. They are located in villages and towns. The CHPS compounds are staffed with auxiliary nurses/midwives. It is headed by one of the auxiliary staff (CHIPS, 2014:14 – 15). The health centres have nurses, midwives, laboratory technician, and physician assistants. The latter heads the facility. They provide basic outpatient preventive and curative services that cover reproductive health in addition to the treatment of minor ailments and incision and drainage referring complicated cases to the district level facilities (hospitals). The polyclinic is an upgraded version of the health centre and is located in urban communities. It is under the headship of a medical officer. Polyclinics offer a number of upgraded health services which include surgery (GSS, MOH and ORC Macro, 2002:18 – 20; Awoonor-Williams, 2016:3).

The next level of care delivery is the hospital. Almost every district/municipality has at least one 50 - 60 bed capacity hospital called the district/municipal hospital. Compared to the sub-district level, it is staffed with more skilled and competent staff which provide 24-hour upgraded healthcare for both out- and in-patients. It provides 24-hour care both preventive and curative services in obstetrics and gynaecology, child health, medicine, surgery, accident and emergency medicine. It also serves as a referral centre for the lower levels as well as training and technical supervision for them. It is headed by a medical officer (GSS, MOH and ORC Macro, 2002:18 – 20; Awoonor-Williams, 2016:3).

The regional hospital forms a secondary level of healthcare in the Ghana Health Service health delivery structure. Except for the newly created regions, almost every region has this facility. It is mostly a 150 - 200 bed capacity facility strategically situated to provide more refined and specialised care than the district level hospital. Its staff mix usually composes of different cadres of medical professionals such as general surgeon and physicians, paediatricians, general and specialised nurses and midwives. A regional hospital serves as a referral as well as a training and supervision centre for the district level facilities. The basic disciplines usually covered in its services include medicine, surgery, obstetrics and gynaecology, dental, psychiatry, accident and emergency medicine, ENT (ear, nose and throat), ophthalmology, dermatology, paediatrics, geriatrics, laboratory and diagnostics. It is headed by a medical officer (GSS, MOH and ORC Macro, 2002:18 – 20; Awoonor-Williams, 2016:3).

A teaching hospital provides highly technical and complex care classified under tertiary level healthcare. It is expected to be the centre of excellence. It has a highly skilled staff mix from both the medical and the paramedical cadre. Its administration involves personnel from ministries of

health and education, universities, government and the community. Teaching hospitals are autonomous. Aside from being a referral centre from the lower level, it provides both specialised preventive and curative care which may involve research and ‘extramural activities. It has an oversight role of providing basic and post-graduate training and supervision for professionals throughout the country (GSS, MOH and ORC Macro, 2002:18 – 20; Awoonor-Williams, 2016:3).



3.7 THE INTERVENTION MAPPING STEPS AND METHODS

Table 3-2: Summary of the intervention mapping steps and methods

Stage of study/ IM Steps	Objective	Design	Population /sample	Data collection	Analysis	Rigor
1	To assess healthcare workers at ART Units' knowledge, attitude and self-efficacy for providing SC education to WLHIV.	Descriptive cross-sectional survey	<p><u>Population:</u> nurses, midwives, nurse-midwives at the 21 'traditional' ART Units in the Volta Region (VR)</p> <p>Sample: 96</p>	Self-administered Questionnaire	Quantitative analysis using parametric and non-parametric tests	<ul style="list-style-type: none"> - Validity (face, content construct) - Reliability
Logic model of the problem	To explore and describe the SC needs of WLHIV attending selected ART Units in the study site.	Qualitative	<p><u>Population:</u> reproductive-aged women living with HIV seeking HIV care at selected ART Units in the Volta Region</p> <p><u>Sample size:</u> 24 reproductive-aged women living with HIV.</p>	Face-to-face interview	Thematic analysis	<ul style="list-style-type: none"> Confirmability Dependability Credibility Transferability

Stage of study/ IM Steps	Objective	Design	Population /sample	Data collection	Analysis	Rigor
2 Formulation of the programme outcome and objectives	Set objectives for the development of the SCTP	Analysis of findings from objectives 1 and 2 to be fed into the training programme The setting of objectives based on the findings.				Quality control
3 Programme design	To design a training programme for healthcare workers at ART Units on SC education for WLHIV.	Qualitative	Population: Senior nurses, midwives and nurse-midwives (clinicians, educators and in public health); female executives of PLHIV association and Regional HIV Coordinator Sample size: 7	Findings from step 1 in addition to proceedings from the nominal group: discussions, minutes and field notes	Thematic analysis	Individual expert reviews
4 Programme production	To pilot and refine the training programme designed for healthcare workers at ART Units on SC education of WLHIV.	Both quantitative and qualitative designs	Population: [A] Nurses, midwives, nurse-midwives from selected ART Units in the Volta Region.	[A] i. Self-administered Questionnaire	[A] i. Quantitative analysis using parametric and non-parametric tests	[A] i. Validity (face, content and construct) ii. Reliability ii. Confirmability

Stage of study/ IM Steps	Objective	Design	Population /sample	Data collection	Analysis	Rigor
			<p>[B]</p> <p>i. Trainers</p> <p>ii. Nurse or midwife or nurse/midwife educator from the NG membership (to be observer)</p> <p>[C] WLHIV who had had SC education from selected ART Units in the VR.</p>	<p>ii. The post-intervention summary evaluation tool</p> <p>iii. Focus group discussion</p> <p>[B] Post-intervention summary evaluation tool</p> <p>[C] Face-to-face interview</p>	<p>ii. Thematic analysis</p> <p>iii. Thematic analysis</p> <p>[B] Thematic analysis</p> <p>[C] Thematic analysis</p>	<p>Dependability</p> <p>Credibility</p> <p>Transferability</p> <p>iii. Confirmability</p> <p>Dependability</p> <p>Credibility</p> <p>Transferability</p> <p>[B]</p> <p>Confirmability</p> <p>Dependability</p> <p>Credibility</p> <p>Transferability</p> <p>[C]</p> <p>Confirmability</p> <p>Dependability</p> <p>Credibility</p> <p>Transferability</p>

Step 1: A logic model of the problem

Step 1 of the framework is a needs-assessment stage that is supposed to help the researcher to delineate the problem identified and to determine the appropriate intervention to solve it, thus, establishing the logic model of the problem (Bartholomew Eldredge *et al.*, 2016:14). By the end of this stage, it is expected that the researcher would have constituted a working team with which to plan the intervention programme, carried out a needs assessment which would lead to a vivid description of the context for the programme as well as its goals.

In this study, the researcher's planning team was constituted of herself, her two supervisors and members of the nominal group who participated in identifying additional areas and scope of the training programme. Further, the expert reviewers of the programme were also considered as part of the team. Apart from the researcher and her supervisors who worked on the programme from the start to the end, other members, changed as needed, as the development of the programme advanced. Both supervisors hold doctoral degrees in nursing science (with dissertations in the field of HIV/AIDS) and one was an associate professor. They were both lecturers in fully-fledged universities in South Africa with many years of experience in the nursing academia. Members of the nominal group, like the reviewers of the SCTP, were healthcare workers. They were nurses and midwives of the rank of principal and above, and medical officers in academia who were in HIV care (clinicians and educators) in addition to a female representative of the NAP+ (Network of Association of People Living in HIV). The researcher believed that a team comprising of this cadre of experts should be able to develop a practical training programme of worth and significance in HIV care (Bartholomew Eldredge *et al.*, 2016:214) to remedy the identified situation.

In analysing the identified situation (conducting a needs assessment to create a logic model of the problem) both primary and secondary data were used for the needs-assessment. Literature review enabled an extensive study of the SC among WLHIV. Those questions ('what are the SC needs of WLHIV in the Volta Region; what is the knowledge, attitude and self-efficacy of HCWs regarding SC in the Volta Region?') could not be answered through the literature review were answered through primary data collection. Surveys, interviews and nominal group technique were used (Bartholomew Eldredge *et al.*, 2016:248) as the different research questions posed could not be answered with a single method necessitating that the researcher use different methods. Further, the researcher drew on the synergy and complementarity of both methods to get a better understanding of the subject matter on SC education of women living with HIV (Gray, 2014:37).

3.8 THE QUANTITATIVE STUDY (SURVEY)

This first objective of the study which sought to assess the knowledge, attitude, self-efficacy and interest of ART Unit healthcare workers for providing SC education to WLHIV was achieved using a cross-sectional survey. Creswell (2014:296) and Gray (2014:234) defined survey research as a quantitative description of the characteristics (such as knowledge and attitude) of a sample that can be projected on its population. A cross-sectional survey, therefore, imply that data was collected at one point in time (Gray, 2018:36). Rickards *et al.*, (2012:407) agree that surveys are ideal for generating data on abstract conceptions that are otherwise challenging to quantify such as attitudes, believes, opinions among others in medical research. A cross-sectional survey, a survey type, implies that data was collected at one point in time (Gray, 2018:36). The researcher found the cross-sectional survey appropriate because it would give an objective estimate on the knowledge, attitude and self-efficacy on HCWs regarding SC education. This is because previous literature on the subject matter in Ghana (Laar, 2013:4)

and other countries reported poor outcomes through exploration (Kawale, *et al.*, 2015:7; Moodley, 2014:7; Goggin *et al.*, 2015:1001-1002; Laar, 2013:7; Matthews *et al.*, 2014:212; Matthews *et al.*, 2016:4 - 5). The researcher, therefore, wanted to assess, objectively, the situation among HCWs in the Volta Region to determine the need for a training programme.

3.8.1 Population

According to the National AIDS/STI Control Programme (GHS and NACP, 2017:17) nurses, midwives and nurse-midwives are part of the multidisciplinary team that mans the ART units. However, the quota that should represent this cadre of health professionals in the team is not specified in the published guidelines (GHS and NACP, 2017:17). A personal conversation with the Volta Regional Data Manager revealed that each ART Unit in the region should have 2 nurses and 2 midwives in the team working at the unit (Botsoe, 2016). From this information, a sample frame of at least 80 HCWs was expected from the 21 traditional ART unit taking into consideration that some might not be at post. However, on the field, a population size of 98 was found.

3.8.2 Sample size and sampling

Considering the small size of the target population, the researcher adopted total population sampling thereby involving all the available and willing HCWs in the study (Etikan *et al.*, 2016:3). This sampling is advantageous because involving all available HCWs is likely to yield results with more insight compared to taking a sample. Although total population sampling does not involve randomization, statistical generalization is possible. It is also noted that in cases of non-response which is not random, findings may be skewed (Glen, 2018)

3.8.3 Data collection tool adaptation

A questionnaire was used as the survey instrument. Cottrell and McKenzie (2011:173) defined a questionnaire as a tool that is used to collect information about different but related items that are measuring topics of importance to the researcher. A questionnaire on SC developed by Woldetsadik *et al*, (2015:1370 - 1381) was adopted, adapted and used with permission from the authors. Cottrell and McKenzie (2011:163) argued that because the development of a new instrument of good psychometric qualities takes many resources including time and effort, it is ideal that a researcher makes use of an existing one that is valid and reliable whenever possible. The researcher saved time and money adapting the instrument. It was based on the constructs of the information-motivation-behavioural (IMB) model which was the theory the researcher adopted for the first stage of the study. It was the only survey instrument available on the SC at the time of its use (Woldetsadik *et al*, 2015:1371).

The fear expressed by Cottrell and McKenzie (2011:164) about a mismatch between the items on the existing scale and the construct of the programme it is being adopted for, was not encountered by the researcher. This may be because the researcher used the same theory that was used in the development of the instrument. To use this existing instrument, the researcher observed the five steps outlined for such activity in health promotion programmes (Cottrell and McKenzie, 2011:163-164). These were identifying all the possible instruments that can be used for the intended programme, getting them, establishing their appropriateness for the programme, obtaining the enablers for use and adapting the instrument with caution (Cottrell and McKenzie, 2011:163-164).

To identify the possible instrument that can be used to assess the knowledge, attitude and self-efficacy of the HCWs (nurses, midwives and nurse-midwives) in the ART units in the Volta

Region, the researcher conducted an extensive literature search in the appropriate databases. These include CINAHL, PubMed, Medline and other such related databases as outlined in the literature review section (chapter two). The researcher observed that studies on the subject of SC bearing on these provider-level variables (knowledge, attitude and self-efficacy) were mainly qualitative (Cottrell and McKenzie, 2011:163).

There was a dearth of studies on such quantitative studies (Goggin *et al.*, 2015:652). The few quantitative studies available used instruments whose development did not follow the robust process for developing psychometric tools (McKenzie *et al.*, 2013:126). The only study that the researcher found using an instrument that went through a psychometric scale development process was by Goggin *et al.*, (2015:652). Thus, the researcher found only one survey instrument on the subject matter to be assessed. She accessed the instrument from the publication that featured it (Woldetsadik *et al.*, 2015:1370-1381) and went through it thoroughly to determine its appropriateness for her study thus working through steps two and three of using an existing instrument concurrently.

Convinced of its contextual appropriateness (similar setting, population) and psychometric qualities (validity and reliability) and analysis procedure, the researcher contacted the lead author whose email was provided in the published article. She explained her intent to adopt and adapt the instrument for her dissertation and was granted (as shown in Appendix 2A). Since the tool was not copyrighted, there was no need for step four activities as Cottrell and McKenzie (2011:163-164) outlined, the permission via the email received sufficed (Appendix 2B).

The original instrument (sectioned into four sub-scales) covered information captured motivation expressed as HCW stigma of childbearing (5 items), interest in providing SC

education (9 items), the perceived value of providing SC education (6 items); and behavioural skills as self-efficacy for providing SC education (8 items). Each sub-scale of the instrument had SC items on a 3 to 10-point Likert scale which could be of the strongly Agree, Agree, ... strongly disagree (a); Yes, No, Not Sure (b) or 1 – 10 (c) type. In all, the instrument had 28 items and was in English. Validity and reliability were established and the authors reported high internal consistency with Cronbach's ranging between 0.6 and 0.94 (Woldetsadik *et al*, 2015:1370- 1379) (see Appendix 3 for the original questionnaire). The questionnaire was adopted and adapted for the study (Cottrell and McKenzie, 2011:163-164).

In adapting the survey instrument, two new sections were added. Section A requested the provision of participants' socio-demographic characteristics. The other section added items for knowledge on a SC that was not captured in the original instrument. The originators of the instrument published another article captioned *Attitudes, knowledge and correlates of self-efficacy for the provision of safer conception counselling among Ugandan HIV provider* which featured this variable in addition to those contained in their instrument (Goggin *et al.*, 2015:651-660). The authors reported the validity and reliability of this variable (captioned as awareness of SC method with a Likert-scale response of 'yes, no, not sure') it was adopted to measure knowledge of HCWs in this study. For uniformity and comparability, all the item responses were changed to a 5-point (1, 2, 3, 4 and 5) Likert scale to generate numerical data and also to enable ranking of the phenomena under study. This made all the responses ranked variables (Cottrell and McKenzie, (2011:116; Sullivan and Artino, 2013:541)). This also made room for a more robust analysis compared to categorical variables whereby means, standard deviations and parametric statistics can be employed (Sullivan and Artino, 2013:542).

Subsequently, the items were changed from questions (which demanded *strongly agree, agree ... to strongly disagree*) to statements that allowed participants to rate themselves on a scale of

1 to 5. Also, some words which were not consistent with the Ghanaian language were changed, e.g., 'live sex' was changed to 'raw sex'. One open-ended question 'what is safe conception?' was included to elicit information on what the participants' understanding of the topic was. Identifying items such as name and residential address were not included. After these adaptations, the instrument was then pretested to identify and address any challenge that may arise before the main data collection (McKenzie *et al.*, 2013:136). It helped to test whether the items on the survey instrument were appropriate, easy to understand and well presented. It was also to perform a preliminary analysis that would investigate the individual items of the questionnaire. Gray (2018:241) observed that a survey instrument might have to be tested many times before a satisfactory version is arrived at. In all, two rounds of pretesting were carried out before the instrument was ready for use in the main study.

3.8.4 Pre-testing the adapted instrument

Before the data collection, the two research assistants had a one-day training with the researcher on the rudiments of the procedure (Polit and Beck, 2017:1181). Both research assistants had at least a first degree and had submitted an individual thesis to that effect. One was a nurse and the other majored in medical sociology at the masters' level. The purpose of the study was explained to them and their roles were stressed. They were taken through the five sections of the data collection tool regarding what was expected of the HCWs who were to fill them. They were to give out the hard copies of the questionnaires to the HCWs, allow them time to fill them out and then collect them back. They were to assist with explanations where necessary, but not to fill the questionnaires for the HCWs as it was a self-administered tool. They were also to check for completeness of the filled questionnaires item by item, immediately upon collection. The research assistants were trained to draw the attention of the HCWs to discrepancies and incompleteness. The filled questionnaires were to be returned to the

researcher within 24 hours of arrival from the field. The research assistants were involved in the pretesting to have the field experience of what their roles entail in the actual study (Polit and Beck, 2017:1181; Molyneux *et al.*, 2013:ii).

The questionnaire was pretested on newly qualified nurses, midwives, nurse-midwives. They were professionals who were 2 years or less in their careers and had ever had an internship at the ART Units or were involved with HIV care but were not stationed there (in the ART units) as at the time of the pretesting. This category of professionals was chosen because they had some idea about the subject matter and could make meaning of the questionnaire. More so, the target population was too small to be involved in the pretesting. The participants of the pre-test were purposively selected from the three health facilities in Ho, the metropolis of the Volta Region based on volunteerism and their experience in HIV care which mimicked the target population.

Self-administered, paper-based delivery and collection (face-to-face) technique was employed (Gray, 2014:242). As indicated by Polit and Beck, (2017:503), the researcher found this technique most appropriate in that the respondent is readily assisted with any difficulty. Also, the response rate is likely to be higher as the researcher waits to collect the questionnaire after filling it. The presence of the researcher also ensures that the response is from the respondent and others were not involved. Doyle (2010:np) observed that despite these advantages, face-to-face administration of a questionnaire is costly and time-consuming. On the other hand, most of the target population did not have access to a digital platform. The inconvenience of getting internet access in hard-to-reach areas, especially remote villages (GHS, 2015b:28) could raise the non-response rate. Weighing the advantages and disadvantages, Polit and Beck (2017:442) assert that face-to-face administration of questionnaire is the best method of survey data collection.

In the first round of the pretesting, 20 participants were recruited (Polit and Beck, 2017:493). They were informed the exercise was a pretesting project was aimed at preparing the survey instrument for the main study, hence, their objective inputs were required for fine-tuning the instrument. It was explained to them that they were expected to scrutinise the items on the questionnaire for appropriateness regarding grammar, comprehension, sequencing, legibility general arrangement of the items and reading level (Tools4dev, 2014:4) They were also encouraged to make any input they deemed fit but was not mentioned (Polit and Beck, 2017:268; Tools4dev, 2014:4). Those willing were given the questionnaires to fill with the accompanying information sheet and consent form. They were encouraged to call for assistance if necessary (Tools4dev, 2014:4). Approximately, it took about 45 minutes to an hour to complete the questionnaire. Where there was a need for assistance with explanations, it took a long time. The longest time spent was 80 minutes with assistance and some level of workplace interruptions. The filled questionnaires were checked for completeness by the research assistant II and the researcher. The participants were then asked to comment on the items of the questionnaire and give suggestions regarding the earlier explanation for improvement which some of them did. The verbal inputs were entered into the field notebook (Tools4dev, 2014:4). The responses of the participants were examined critically to note a need for making the necessary changes in the instrument (Polit and Beck, 2017:268; Tools4dev, 2014:4)).

The feedback provided by the participants and the outcome of the preliminary analysis of data from the first round of piloting necessitated the amendment of the questionnaire (Polit and Beck, 2017:493; Tools4dev, 2014:5). Some participants pointed out that a few items on the questionnaire were either too long, ambiguous or not conveying the intended meaning. Some typographical errors, as well as omissions in item numbering, were also pointed out. According to other participants, some items on the questionnaire gave clues to the answer of an open-

ended question ‘What is safe conception?’. It also came to light that the item on ‘cadre of healthcare worker’ should be changed from ‘nurse, midwife’ to ‘auxiliary nurse/midwife and registered nurse/midwife (Polit and Beck, 2017:493). Further, the analysis indicated that some items were redundant as they seem not to be measuring any of the latent variables of interest. A model of fit could also not be established with the data obtained. These observations necessitated amendment and a second-round pretesting of the instrument (Tools4dev, 2014:5).

Using the above feedback, fine-tuning was done after the first round of the pilot (Tools4dev, 2014:5). The items on the questionnaire were remapped onto the latent variables of interest in the context of the information, motivation behavioural model (knowledge, attitude and self-efficacy) and the redundant ones (that were not directly measuring the variables of interest) were dropped. One of such items that was measuring stigma rather than motivation (example ‘HIV+ people often lack all that they need to bring a child into the world’) was dropped. This was done because the item was not directly measuring any of the variables of interest. The open-ended question was also dropped. Others were reworded to shorten them and for clarity. Editing was also done reducing the seven-page document to four pages (Tools4dev, 2014:5).

The second round of pretesting involved 30 participants of the same characteristic as described in the first round. The procedure, as earlier described, was repeated in the three health facilities in the Ho metropolis: Ho Polyclinic, the Volta Regional and Municipal hospitals (Tools4dev, 2014:5). On analysis, a model of fit was established and finalization of the instrument was done as per Appendix 4.

3.8.5 Preliminary analysis of the scale items (pre-test data)

Reliability and validity are estimations that help determine the appropriateness of an instrument. Reliability estimates the repeatability of an instrument. It tells how consistent an

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instrument is when it is repeatedly used under similar conditions. The validity, on the other hand, estimates how accurately the instrument measures what it is supposed to measure (Bolarinwa, 2015:195).

3.8.5.1 Reliability

Table 3-3 shows the reliability results (measured by Cronbach's alpha scores) indicating the items under each variable that produced satisfactory scores at $\alpha \geq 0.70$. Most of the items in the questionnaire had acceptable Cronbach's alpha scores (Gliem and Gliem, 2003).



Table 3-3: Reliability results via Cronbach's Alpha scores

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
K-items: $\alpha=0.789$				
K4	8.87	8.716	0.623	0.730
K5	8.94	7.462	0.592	0.743
K6	8.06	7.329	0.579	0.754
K9	9.26	8.798	0.648	0.723
M-items: $\alpha=0.885$				
M4	10.65	11.370	0.700	0.872
M5	10.03	10.832	0.864	0.810
M11	9.65	12.370	0.691	0.875
M12	9.84	10.540	0.761	0.850
I-items: $\alpha=0.906$				
I1	16.45	25.656	0.620	0.906
I2	16.81	23.695	0.700	0.896
I4	16.58	21.052	0.885	0.866
I5	16.00	23.333	0.766	0.886
I6	15.94	24.596	0.738	0.890
I8	15.81	23.695	0.745	0.889
C-item: $\alpha=0.924$				
C1	16.26	27.198	0.733	0.917
C2	16.68	26.092	0.818	0.906
C4	16.48	25.925	0.786	0.910
C5	16.23	25.381	0.811	0.907
C6	15.94	26.196	0.734	0.917
C9	16.32	26.492	0.814	0.907

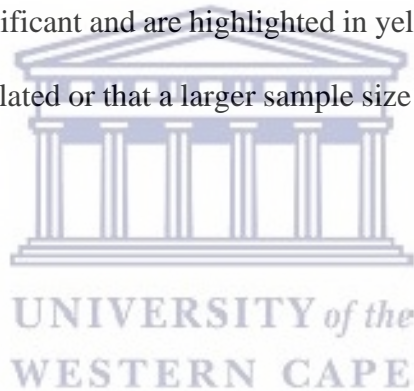
K- items, representing knowledge; M- items, representing motivation; I- items, representing interest; C- items, representing self-efficacy

3.8.5.2 Convergent validity

Convergent validity was achieved by estimating Average Variance Extracted (AVE). According to the threshold, AVE should be greater than 0.5 and loading amplitudes in Figure 3-4 proves that. This implies that the latent factors were well explained by its observed variables which were found to be reliable.

3.8.5.3 Concurrent validity

This was measured using bivariate correlation and the results are shown in Table 3-4. All the correlation coefficients asterisked were significant at either 99% or 95% confidence level. Only a few coefficients were not significant and are highlighted in yellow. This implies that some of the correlated items were not related or that a larger sample size might be required to ascertain correlation.



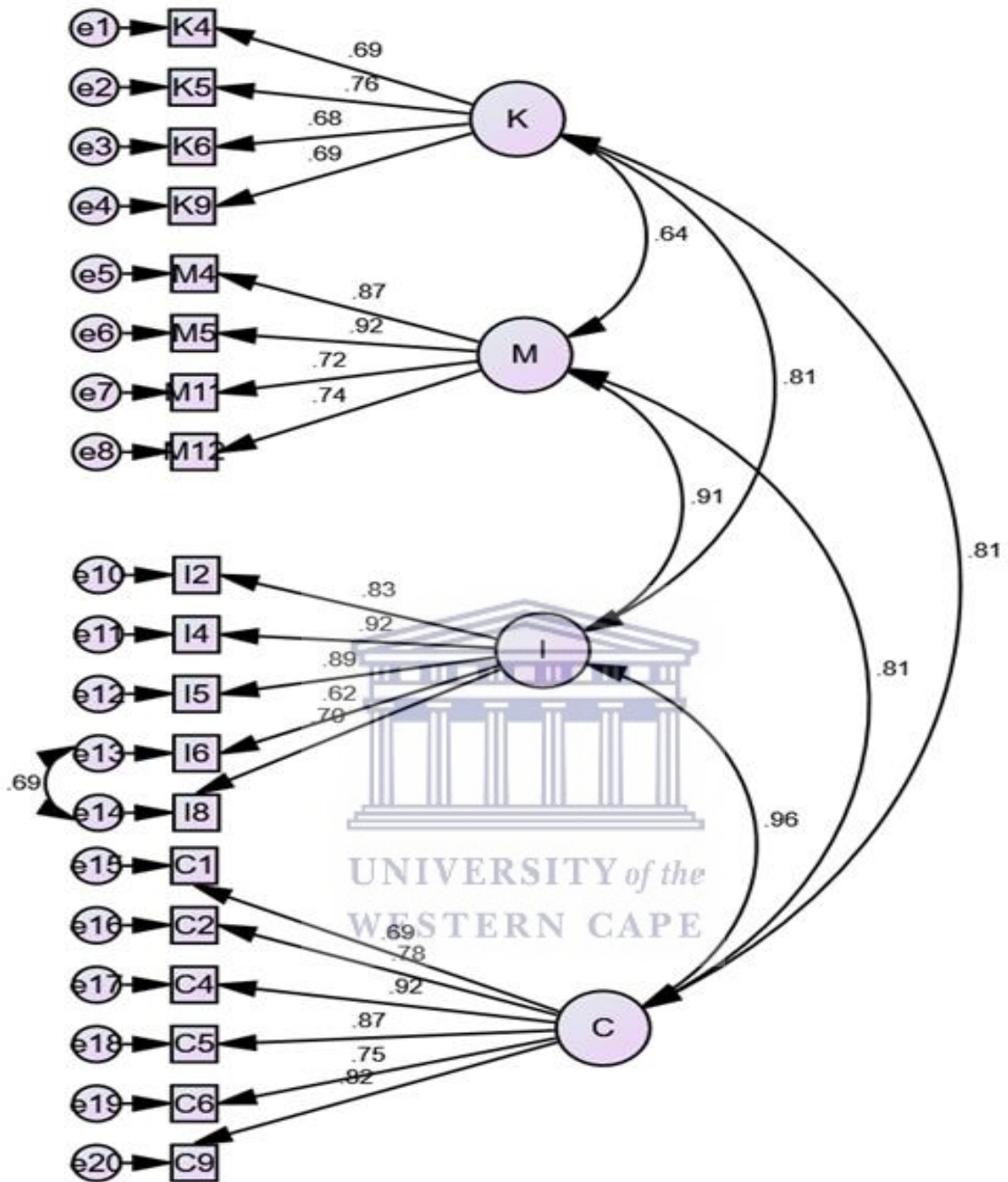


Figure 3-4: Confirmatory Factor Analysis showing Standardised Factor Loading Amplitude.

Table 3-4: Validity results via bivariate correlation

	K4	K5	K6	K9	M4	M5	M11	M12	I1	I2	I4	I5	I6	I8	C1	C2	C4	C5	C6	C9
K4	1																			
K5	.530**	1																		
K6	.471**	.442*	1																	
K9	.528**	.508**	.537**	1																
M4	.548**	0.333	.358*	0.306	1															
M5	.455*	0.259	.620**	.425*	.782**	1														
M11	.366*	.424*	.707**	0.289	.460**	.727**	1													
M12	0.281	0.144	.497**	0.183	.628**	.705**	.675**	1												
I1	0.260	0.083	.456**	0.003	.513**	.545**	.503**	.563**	1											
I2	.616**	.648**	.583**	.401*	.660**	.608**	.467**	.394*	.453*	1										
I4	.573**	.456**	.473**	.473**	.896**	.800**	.538**	.569**	.600**	.759**	1									
I5	.411*	.618**	.535**	.405*	.690**	.653**	.664**	.412*	.451*	.758**	.817**	1								
I6	.374*	0.242	.428*	0.291	.638**	.581**	.455*	.617**	.618**	.498**	.675**	.473**	1							
I8	.474**	.460**	.420*	0.331	.670**	.637**	.664**	.662**	.529**	.434*	.708**	.625**	.821**	1						
C1	0.339	.454*	0.315	0.228	0.347	.441*	.523**	0.095	0.286	.456**	.483**	.593**	0.310	.427*	1					
C2	0.328	.488**	.421*	.398*	.462**	.632**	.526**	0.282	0.194	.615**	.562**	.596**	0.182	0.299	.729**	1				
C4	.449*	.723**	.505**	.530**	.659**	.600**	.563**	.361*	0.303	.805**	.814**	.913**	.446*	.538**	.601**	.687**	1			
C5	.365*	.416*	.567**	.416*	.664**	.740**	.619**	.498**	0.333	.748**	.743**	.797**	.418*	.417*	.596**	.755**	.805**	1		
C6	.457**	.437*	.493**	.359*	.630**	.757**	.695**	.461**	.544**	.586**	.714**	.647**	.639**	.752**	.668**	.592**	.568**	.614**	1	
C9	.393*	.630**	.521**	.537**	.520**	.633**	.464**	0.227	0.320	.715**	.643**	.700**	0.290	.417*	.585**	.732**	.710**	.690**	.753**	1

** . Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed). Coefficients that are not significant and are highlighted in yellow

3.8.6 The final version of the data collection instrument

The final version covered the major constructs of knowledge, motivation, self-efficacy and interest to carry the desired behaviour (SC education) as outlined in the IMB model. The first section contained a short introduction to the purpose of the study, a statement requesting consent and date in addition to 11 socio-demographic characteristic items such as

age, sex, religion, a cadre of healthcare worker, level of education, place and department of work etc. It also requested the provision of years of working experience with HIV clients and whether the HCW has a relative living with HIV. Section B had 10 items on knowledge of SC strategies and related issues. Section C had a total of 12 items; 10 on personal attitudinal factors regarding SC and 2 items on normative factors. Then follows Section D with 10 items which bore on HCW interest in providing SC education. The last section was E which contained 10 items on reported self-efficacy for the provision of SC education. Appendix 4 shows the complete instrument used for the data collection.

3.8.7 The actual survey

After making the relevant adjustments in the data collection instrument, (Appendix 4 shows the instrument), as indicated by the results of the two rounds of pretesting, the researcher proceeded with the data collection for the main study. This is a report of the survey carried out between November 2018 and March 2019.

3.8.7.2 Data collection instrument

The instrument as described under previously *The final version of the data collection instrument (section 3.8.6)* was used for the data collection.

3.8.8 Data collection procedure

As asserted by Polit and Beck (2017:140) a researcher must work out and gain entrée to a research setting. Entry permission was sought from the Ghana Health Service Ethics Review Committee (GHSEC), the Volta Regional Health Directorate and then the administrations of the involved health facilities thus at the national, regional, hospital and the ART unit levels. The ethical clearance certificate obtained from the University of the Western Cape (Appendix 5A) was used to secure the Ghanaian version from the GHSEC (Appendix 6). The latter was used to secure an introductory letter from the Volta Regional Health Directorate (Appendix 7) presenting her to the hospital facilities as an approved researcher who should be accorded the needed assistance. The researcher distributed the GHSEC clearance certificate and the introductory letter to the 22 hospitals involved in the study site at least two weeks ahead of the arrival of her team for data collection (Singh and Wassenaar, 2016:44).

After processing the document, the HCWs who were the ART unit managers of the facilities were informed with copies. Using the telephone, appointments were scheduled with the facility managers of the ART units involved in the study. On the appointed dates, the researcher or one of her two research assistants visited the facilities for the data collection (Singh and Wassenaar, 2016:44).

With the help of the facility managers of the ART units, the nurses and midwives working at the units or are affiliated with it were contacted (Singh and Wassenaar, 2016:44). The researcher observed that due to HCW shortage, some nurses/midwives placed in other departments work at the ART unit on HIV clinic days only. Other nurses and midwives at some CHPS zones of hard-to-reach areas work as affiliates of some of the ART unit in their district. They collect the ARVs from the ART units of the hospitals in their districts to their clinics.

These staff then, give out the ARVs to the PLHIV who attend their facility, collate the needed data and send as returns to the ART units of their affiliation for entry. This was part of the health system structure to ensure accessibility to HIV care in hard-to-reach areas within the Volta Region.

The HCWs who were present were approached and verbally briefed about the purpose of the study, confidentiality, their right to withdraw at any point without consequences. Willing HCWs were given the informed consent form (Appendices 8A and 8B) to read and sign (Polit and Beck, 2017:1258). Some gave excuses of time constraints and so were given verbal version of what was on the informed consent form and they signed on the spaces provided on the questionnaire. The hard copies of the structured self-administered questionnaires were given to them to fill.

The filled questionnaires were perused there and then for completeness and attention drawn to incomplete, omitted or wrongly filled items. The researcher or the assistant ensured that the lapses detected were attended to as directed before the questionnaires were finally collected (Polit and Beck, 2016:757). In a few instances (about 10 cases) the HCWs were not at post (they were off duty or on leave). With the help of their unit managers, they were contacted on the phone. Under mixed-mode methods of survey data collection which improves response rate (Leeuw, 2005:238), they (HCWs involved) willingly gave directions as to how the questionnaires could reach them and their directives were followed.

The filled hard copy questionnaires were retrieved within 72 hours from 6 of them. One of them filled the questionnaire, scanned it and sent it to the researcher by email. This was printed out and added to the already collected questionnaires. Two others filled them, snapped pictures and sent them to the researcher via WhatsApp. Another requested a soft copy of the

questionnaire via email which he filled and returned by the same route. In these three instances where filled soft copies of the questionnaire were received, the researcher printed out each of the returned soft copies. These were cross-checked by one of the research assistants for accuracy and completeness. They were then added to the pile already collected in a lock-secured cabinet in the researcher's office. Leeuw (2003:240-241) reviewed the literature on mixed-mode (face-to-face, mail and telephone) data collection reported no significant variability in findings. Since the researcher had a password for her email making the document safe, the sent file was securely kept in it. On the other hand, those responses which were sent via WhatsApp were deleted after the hard copies were generated from them.

In another circumstance where the nurses and midwives who were affiliated to ART units were dwellers of hard-to-reach areas (unmotorable areas and beyond river banks), the hard copies of the questionnaires were sent through the Volta Regional Data Manager who sent and retrieved them alongside their logistics. This was observed with 4 HCWs. Administrative bureaucracies at the hospitals and amendment of the data collection tool coupled with two rounds of piloting spanned the data collection period from April 5, 2018 to August 3, 2018 (5 months).

3.8.9 Data preparation and processing

After the data collection, the researcher coded the individual questionnaires with numbers (from 01 to 98) to make room for easy identification, retracing and reference where necessary. Since the survey instrument had items on the place of work and department, differentiation with code according to the facility was not done. Data were entered into an online coded data capture template created in Google Forms. This is a survey administration application with a spreadsheet. Among other uses, this platform is used to conduct a survey or capture data for analysis. One of its disadvantages is that it relies solely on the internet to function (Melo, 2018).

After entry of the data on this platform, it was then entered into IBM SPSS (International Business Machine statistical package for social sciences) version 25 for analysis.

Data analysis was preceded by case and variable screening aimed at cleaning the dataset generated before further analysis (Polit and Beck, 2016:761). Two cases were found to have more than 10 per cent missing values on the latent reflectors and therefore removed from the sample size. This was attributed to network fluctuations during data entry (Melo, 2018). Other cases with missing values were replaced with their near-point mean estimates (Polit and Beck, 2016:764). All retained cases showed evidence of engaged response with the least standard deviation greater than 0.5. There is fairly normal distribution in the indicators of latent variables in terms of skewness and kurtosis based on the more relaxed range recommended by Sposito *et al.*, (1983) who put the upper threshold at 3.3. However, most indicators were further checked for normality if they violated the stricter rule of normal distribution of ± 1 .

Two values were missing under marital status while five values were missing under the variable of age. A contingency analysis between age group and marital status was conducted to determine a significant association between the two variables. This way, it was possible to figure out the replacement values (Polit and Beck, 2016:764). Thus, the cases with missing values under marital status were assumed to be married given their age brackets (40-49; and 50-59 years). Similarly, cases with missing values under age were assumed based on the average age of those in the same marital status with them. The replacement values were 29 for singles and 37 for married. Other demographic variables with missing values not more than 2 instances were not replaced. These include experiences, Category of health worker; and Relative or Friend living with HIV. With thorough data cleaning, the final sample size came down to 94.

3.8.9.1 Data exploration

The long-standing debate on whether or not to employ parametric analysis for Likert-scale data calibrated with numbers still rages on in medical literature (Jamieson, 2004:1217; Sullivan and Artino, 2013:542; Norman, 2010:6627-628). Jamieson (2004:17) summed up the debate one side of the debate that Likert scale data as those of interval scale and subjecting them to parametric analysis, the mean and standard deviation is inappropriate. On the other, hand Norman (2010) garnered a comprehensive review on the subject that discredits the assumptions underlying the earlier presentation. Norman, described as one of the “world’s leaders in medical education research methodology” (Sullivan and Artino, 2013:542) produced seminal works that provided compelling evidence through actual and simulated data that contravened the debate against deploying parametric analysis for Likert scale response data (Norman, 2010). The author safely concluded that “parametric statistics can be used with Likert scale data, with no fear of “coming to the wrong conclusion”” (Norman, 2010:631). Based on this evidence, the researcher used both parametric and non-parametric statistics in analysing the data collected.

Exploration factor analysis (EFA) was performed for the four latent constructs in order to extract items that adequately measure each of the constructs (Hayton *et al.*, 2004:192). Lack of consistency in terms of sample size, factor loadings, number of factors, number of variables needed to generate quality results in factor analysis persists in the literature. It is however important to note that the reasonable absolute minimum sample size required to yield quality results has been faulted (Peterson and Mundform, 2010:366). Some scholars have argued that EFA can produce results even from sample-sized below 50 provided the factor loadings are high, the number of factors is low and the number of variables is high (De-Winter *et al.*,

2009:149). It is on this premise that a sample of 94 with four latent constructs and 42 variables were considered sufficient for exploration.

Both types of factor analysis (exploratory factor analysis and confirmatory factor analysis) were employed. Exploratory factor analysis (EFA) was used to determine which of the variables adequately explain variation in the four latent constructs (Finch, 2006:41). The maximum likelihood method was used for extraction of factors (Ximénez, 2009:1038) while Promax rotation was used for the model optimization with Kappa set at 4. Other criteria include: eigenvalues >1 ; suppression of small coefficients was set at <0.3 ; loading factor >0.64 (Finch, 2006:50). From the EFA results, a four-factor model was extracted with the least variable having eigenvalue =1.033 which is greater than 1. The four factors explained 62.15% of the total variance having zero nonredundant residuals with absolute values greater than 0.05. The retained items were considered adequate based on the Kaiser-Meyer-Olkin measure of sampling adequacy higher than 0.5 (0.755) and a statistically significant Bartlett sphericity test (<0.001). Seven communalities were above 0.6 while the other three were above the minimum suppression value of 0.3. These results were satisfactory and considered good and significant for the variables under study (IMB, 2015).

3.8.9.2 Validity

The next step was to conduct a construct, discriminant and convergent validity analysis for the latent variables. Confirmatory factor analysis (CFA) was conducted to determine the construct, convergent and discriminant validity of latent constructs. The procedures adopted as well as the results are discussed in the following paragraphs.

3.8.9.3 Construct validity

This is the degree to which the items or indicators on the questionnaire reflect the latent variables they purport to measure (Bolarinwa, 2015:197). To determine this, a confirmatory factor analysis (CFA) model was developed using IBM AMOS (version 25). The model was tested based on the fit indices suggested by Hooper *et al.*, (2008:53-55) and Moss (2009). As shown in Table 3-5, the CFA model fitness shows construct validity. The four-factor model produced fit indices such as: Relative Chi-Square (χ^2/df) = 1.306; Comparative Fit Index (CFI) = 0.998; Root Mean Square Error of Approximation (RMSEA) = 0.020; Standard Root Mean Residual (SRMR) = 0.0454; and PCLOSE = 0.629.

Table 3-5: Model Fit Indices for construct validity

Measure	Estimate	Threshold	Interpretation
CMIN (χ^2)	14.505	--	--
DF	14	--	--
CMIN/DF	1.306	Between 1 and 3	Excellent
CFI	0.998	>0.95	Excellent
SRMR	0.045	<0.08	Excellent
RMSEA	0.020	<0.06	Excellent
PCLOSE	0.629	>0.05	Excellent

-- Not applicable

3.8.9.4 Convergent validity

This type of validity describes the correlation between different measure scores of a construct obtained by different methods which are expected to be similar (Bolarinwa, 2015:197; Polit and Beck, 2017:1260). To test this validity, Malhotra and Dash (2011) argued that Average Variance Extracted (AVE) is a better estimation of convergent validity to ascertain that a latent construct is well explained by its observed variables. As a criterion, AVE should be greater than 0.5 indicating that less than 50 per cent of the variance should be due to error. The results

in Table 3-6 shows that all AVE estimates are greater than 0.5 and thus, the construct at the minimum satisfy good convergent validity.

3.8.9.5 Discriminant validity

Discriminant validity describes the extent to which the measure obtained does not correlate with other constructs from which it is expected to be different (Malhotra and Birks, 2007:359). Discriminant validity is useful for determining that a latent factor/construct is not better explained by some other variables than by its observed variables. The procedure for determining discriminant validity involves estimating Average Variance Extracted (AVE), and Maximum Shared Variance (MSV). Hair and *et al.*, (2010) and Farrell (2010:325) set the criteria thus: MSV estimates must be less than the corresponding AVE estimates for all constructs. Table 3-6 show that MSV estimates are less than the AVE estimates and therefore, discriminant validity is ascertained for the constructs.

Table 3-6: Fit Indices for construct, discriminant and convergent validity

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)	Maximum Shared Variance (MSV)
Knowledge (K)	0.775	0.633	0.177
Attitude (M)	0.753	0.617	0.162
Self-efficacy (C)	0.748	0.602	0.302
Interest (I)	0.826	0.706	0.302

3.8.9.6 Reliability

The reliability of constructs was confirmed by estimating composite reliability scores benchmarked $CR \geq 0.7$. The composite reliability (CR) scores estimated in Table 3-6 are all greater than 0.7 (Aguirre-Urreta *et al.*, 2013:12).

3.8.9.7 Multivariate assumptions

Two important multivariate assumptions were checked before proceeding with hypotheses testing. These were outliers and influential checking and then multicollinearity.

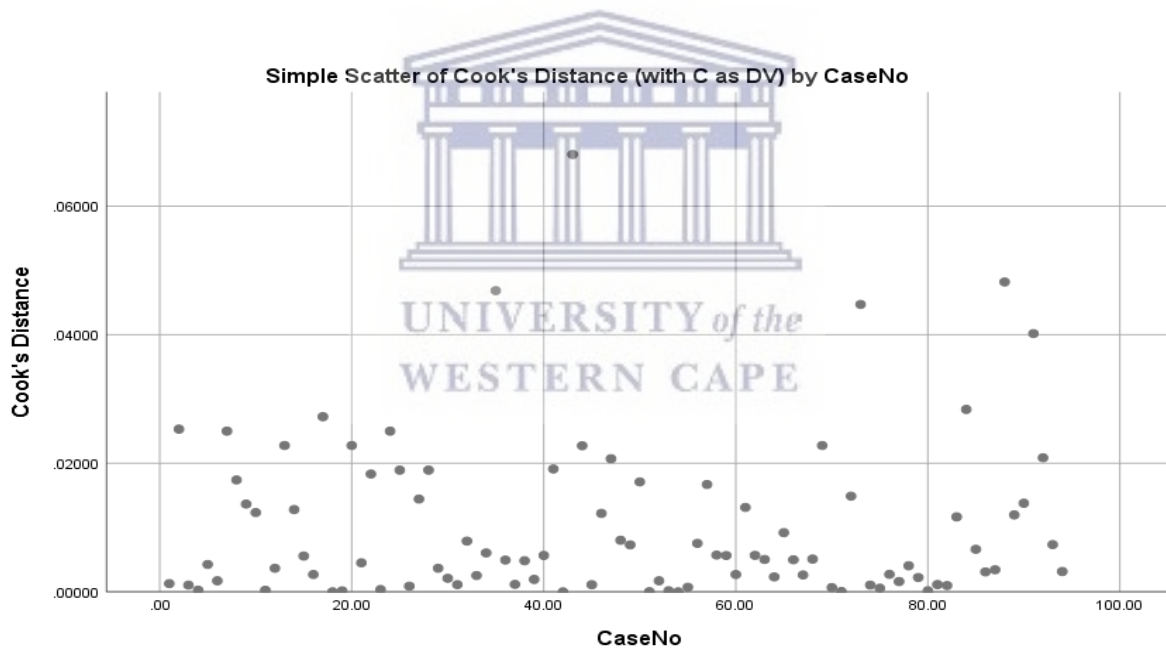
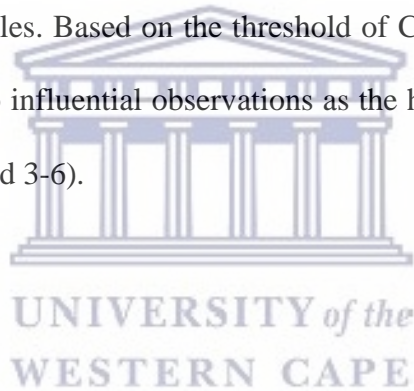


Figure 3-5: Scatter graph showing distribution of Cook's distance estimates of outliers and influential with Self-efficacy (C) as Dependent Variable.

3.8.9.8 *Outliers and influential*

The first multivariate assumption checked was outliers and influential. An influential observation refers to an observation that, individually or in combination with others, exerts a demonstrably larger impact on the estimates such as coefficients and t -values that are derived from the data. Observations that are excessively large and stand apart from the bulk of the data are considered outliers (Nurunnabi *et al.*, 2015:509). Checking for outliers and influential is important because it helps in eliminating cases that could dilute the strength of the regression line or estimates of regression weights (Greasley, 2008:124). To determine this, two separate Cook's distance analyses (Nurunnabi *et al.*, 2015:513) were ran using self-efficacy (C) and interest (I) as dependent variables. Based on the threshold of Cook's distance greater than 1, we observed that there were no influential observations as the highest Cook's distance is less than 0.8025 (see Figures 3-5 and 3-6).



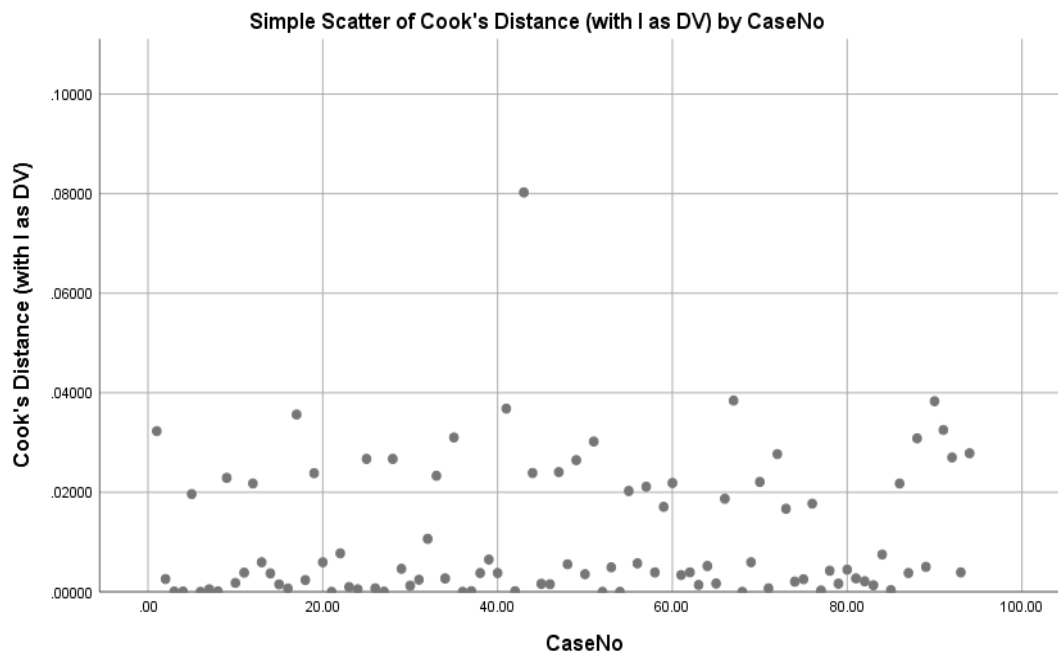


Figure 3-6: Scatter graph showing distribution of Cook's distance estimates of outliers and influential with Interest (I) as Dependent Variable.

3.8.9.9 Multicollinearity

The second multivariate assumption checked was multicollinearity. Multicollinearity refers to the relationship among independent variables (Pallant, 2011:151). Regression analysis is done to estimate the relationship between dependent and independent variables. To do this effectively, the independent variables should not be correlated: when they do, there is multicollinearity. Multicollinearity reduces the statistical power of the regression model, the coefficient estimates and hence demands that the results be interpreted with caution to avoid misleading conclusions (Vatcheva *et al.*, 2016:2). This is measured by estimating tolerance and variable inflation factor (VIF) while estimating the regression line. Ideally, tolerance values greater than 0.1 and VIF (Variable Inflation Factor) values less than 3 indicate good multicollinearity. The results, tolerance = 0.846 and VIF = 1.182, show that the multicollinearity assumption was met (O'Brien 2007:674) (see Appendix 9).

3.8.10 Data analysis and the analytical tools

The factor imputation tool in the AMOS version was used to generate factor scores for the variables to perform one-sample t-test. One-sample t-test is used when the mean of a sample is to be compared to a known value (Rochon and Kieser, 2010:411). With one sample t-test, it was possible to determine the current level of participants' knowledge, attitude, self-efficacy and interest setting the cut off value at 2.5 (the mean value for a scale of 5). Afterwards, a structural model was developed to determine the direct and mediated impact of knowledge and attitude on interest in providing SC education to WLHIV (Tarka, 2018; NCSS Statistical Software, 2021).

3.9 THE QUALITATIVE STUDY

According to step one of the IM, the overarching framework guiding the development of the SCTP, there should be a needs assessment to establish the needfulness of the programme (Bartholomew Eldredge *et al.*, 2016:212). This was done by conducting empirical quantitative and qualitative studies among HCWs at the ART units and WLHVI who access HIV care at those facilities respectively. Following is the account of the qualitative study which explored the SC needs of WLHIV attending selected ART units in the study site.

3.9.1 The study design

A qualitative exploratory study design was followed which enabled the researcher to get the emic perspectives of the WLHIV with regards to what constitutes their SC needs as part of the needs assessment (Reiter, 2017:143; Creswell, 2014:61). The discussion on SC revealed much on client and provider knowledge and attitude towards SC. There is also much literature on SC as a harm reduction strategy and provision of SC services to persons affected with HIV.

However, little is available on the SC needs of WLHIV. In this context a qualitative approach is appropriate (Gray, 2018:163; Creswell, 2014:32; Hunter *et al.*, 2019:1). Hunter, *et al.*, (2019:1) further assert that an exploratory, descriptive qualitative study could be the design of choice.

Qualitative exploratory studies seek to examine in detail the phenomenon of interest by asking questions about it. Answers to these questions may be obtained through a literature search or conducting interviews (Gray, 2018, 36). As literature is scarce on the subject of interest, the researcher decided to conduct individual semi-structured interviews for the WLHIV who wish to have a children within the next 24 months to understand what needs they have regarding SC. Gray (2018:378) maintains that semi-structured interviews are best suited for explorative studies. Individual interviews were considered appropriate because it makes room for privacy and confidentiality which are important with issues of living with HIV and childbearing are quite sensitive and personal and deserves to be treated as such.

3.9.2 Populations for the study

The target population for the study were the reproductive-aged (18-49-year-old) WLHIV who were receiving HIV care at the traditional ART units in the Volta Region of Ghana. The study setting as described earlier (see sub-section 3.4).

3.9.3 Sample size and sampling technique

For qualitative studies emphasis is on reaching data saturation (Dworkin, 2012:1321). The researcher achieved data saturation with 24 WLHIV who were purposively sampled. This sampling technique was adopted by the researcher because it enables the selection of those

WLHIV who were willing to participate in the study and could give a good account of themselves regarding their SC needs (Creswell, 2014:239).

3.9.4 Data collection

Data were collected from 12 of the 22 hospitals which were traditionally designated as antiretroviral therapy (ART) units as of 2016 in the Volta Region. These were the facilities that were operating every weekday and attended to, on average, about six (6) clients a day. The settings for the data collection were similar as they were all hospital settings operating with similar policies and guidelines. The setting included government and CHAG (Christian Health Association of Ghana) institutions. The private health facilities declined their clients' participation based on privacy protection.

3.9.5 Accessing the study sites

The procedure for accessing the study sites was initiated from the national level of the Ghana Health Service. Permission for entry was sought from all administrative levels of the Ghana Health Service (GHS) – national, regional, hospital and then ART Unit levels – using the ethical clearance and introductory letters obtained from the GHS hierarchy following the laid down chain of command as outlined earlier (under sub-section 3.5.2.1 *Accessing the study sites*) This enhanced communication and furthered arrangements after administrative procedures were completed and access to the facilities was granted (Singh and Wassenaar, 2016:44).

3.9.6 Trial run for the interviews

The first batch of interviewees for the first day of the data collections were used for trial run. Though prior to the fieldwork, the researcher practised conducting the interview twice on

friends and made a few corrections on the semi-structured interview guide, she again conducted a pre-test interview on three of the WLHIV in the real study setting (Mcgrath *et al.*, 2019:1003). The researcher engaged the first three WLHIV, who met the inclusion criteria and took them through the interview individually in a way that replicates the actual interview. The researcher used the consent form, the interview guide and also recorded the interview (Hurst *et al.*, 2015:6). At the completion of all three interviews, the researcher listened to the audios generated, transcribed verbatim, and went through the procedure of analysis. Braun and Clarke (2014:1) thematic analysis was applied. The test run revealed some challenges that needed immediate attention.

The researcher observed that some items on the interview guide did not convey the same meaning for the interviewer and the interviewee and hence were not eliciting the construction of the desired experience or information. The question “How do you intend to meet your childbearing desires?” was derogatory in vernacular (Ewe) if certain words were used. In addition, she detected that the interviewees needed some introductory questions as a prologue to gradually usher them into answering the main question the interviewer needed answers to. Thus, delving directly into private issues such as sexual intercourse and attempts at conception without a prologue seemed to puzzle the informants and deterred them from engaging in adequate and detailed discussion. Some thought providing answers that affirmed their childbearing desires would attract scolding as it may mean an intention to spread the infection.

As participants were asked questions that made them talk about their experiences such as their knowledge about ARVs, maintenance of good health etc., before chipping in the main issues gradually the interview took off and was successfully completed. Generally, the participants were fluid and coherent with the needed information. It was also observed that sensing the presence of a third party in or around the office generated some anxiety or uncertainty which

caused the client to pause indefinitely until she was sure of complete privacy. On her part, the researcher noted that non-verbal communication such as nodding was the best way of communicating during the client's narration. It eliminated unwanted but repeated words such as 'uhuh', 'mmm' and 'okay' which were not needed in the analysis. She also noted that some phrases in the local language produced the probing effect needed to generate more information.

With these observations, some adjustments were made. The researcher contacted some elderly women who were apt in the local dialect. With their help, the researcher's diction and style were improved to navigate her way through the interview. The researcher also decided to ask the participants about an introductory question like what they had learnt in the course of their visits to the clinics over the years. She capitalized on their narration around sexual issues to chip in the questions on the interview guide. As much as possible efforts were geared towards ensuring absolute privacy during the interview. The interviewer had notes posted on the office door forbidding unwelcomed entry when an interview session was ongoing. Also, participants were reassured of non-judgmental discussion. The researcher also decided to use non-verbal cues to convey active listening. These informed amendments drastically lessened hitches in the subsequent engagements with the participants

3.9.7 Data collection instrument

The tools used for the data collection were a semi-structured interview guide, recorder, a pen and a notebook for writing field notes. The semi-structured interview guide was developed by the researcher based on the objective of exploring the SC needs of WLHIV in the study setting. It was in the English language. Since it was the researcher herself who used it, it was not translated as the questions were continually modified to probe where the need arose. It had two sections labelled A and B. The first section captured the socio-demographic variables of the

informants such as age, marital status and some aspects of gynaecological history and ART use such as number of lifetime pregnancies, number of children living and number of years on antiretroviral medication. The Section A was meant to help describe the general characteristics of the informants. Section B covered information on what WLHIV think they need to meet their childbearing desires without infecting their partners, the sort of help they thought they need from HCW (Creswell, 2014:244) (Appendix 10).

3.9.8 Recruiting the Participants

The outcomes of application for entry to the facilities were communicated to the researcher either formerly (via emails, letters) or by word of mouth when she called for follow-up. Based on this, she then followed up with the unit manager via a personal visit or phone calls if the facility demanded long journeys. The unit managers were informed that the researcher sought to develop a SCTP for HCWs aimed at facilitating safe procreation among WLHIV. They were also informed of the procedure for data collection. Their roles of helping to identify reproductive-aged WLHIV for the researcher were also discussed with them (Singh and Wassenaar, 2016:44, 227).

Further, measures to put in place to ensure anonymity and confidentiality of both the staff and WLHIV, who might be involved in the study, were explained. It was also discussed that the interview session for a client should be arranged such that it was slotted in-between registration and taking the ARV refills. That was the waiting period. Questions posed were answered and requests for documents on ethical permits were met. The researcher also discussed with the facility managers her need for an enclosed space with basic furniture that can ensure the provision of privacy for interviews. Assurance was given for their provision and appointment

schedules were finalised. All the appointments were scheduled for mornings (Singh and Wassenaar, 2016:44, 227).

The researcher started the data from Ho and ended at Jasikan when saturation was reached. She followed the appointment dates given to her by the various hospitals. On the scheduled day, the researcher reported early to the facility before the clinic session began. This enabled her to settle in the offices allocated to her and put them in order. She assembled, tested and set the recorder ready for use that day. She was introduced to the clients to inculcate trust and also for the initiation of rapport. The clients were usually told that the researcher would like to have a private conversation with some of the women who might meet her criteria upon their consent. They were reassured that refusal to participate had no prejudicial consequences for the quality of care they would receive (Polit and Beck, 2017:260). When given the opportunity, the researcher politely greeted the clients and, in brief, shared words of encouragement with them. The researcher then waited for the consenting clients who were willing to be directed to her in the prepared area (usually the facility managers office) allocated to her.

As the clinic sessions progressed through the routines of registration and checking of vital signs, the unit manager or her representative took the opportunity to scan through the documents to determine WLHIV who might qualify for the interview. With the assistance of the facility data managers, reproductive-aged women living with HIV (WLHIV) aged 18 to 49 years, who were attending the selected ART units and had been on antiretroviral medications (ARVs) for at least six (6) months were identified. This was done using the electronic and the manual registers when the women were going through the routine record taking and verification that preceded the normal ART unit service delivery. On average, these WLHIV return to the clinic every three months for a refill of their ARVs. However, with differentiated service delivery, some clients who were stable and highly adherent return every six months or

more for their refills (NACP, 2017:36). After going through the routine record taking and assessment procedure (including checking of vital signs), they were individually briefed on the research by the unit managers. Those who were willing to participate were then directed to the office provided for the researcher.

3.9.9 Data collection process

On their arrival at the office, the researcher welcomed the participants sincerely and then ushered them to their seat in a private, secure office. Knowing then, that her participants did not want to be noticed by others, the researcher arranged the furniture in the room such that each interviewee was seated with her back to the door while facing the researcher. After an exchange of pleasantries, they were told the researcher was a student who wanted to develop a programme for training HCWs to equip them in facilitating SC among WLHIV. Hence, their views were invaluable in informing the training programme. The researcher verbally briefed the WLHIV on the purpose and procedures (recording of interview) of the study, their rights, especially of withdrawal, confidentiality and anonymity in a language they understood. The fact that the discussion would be tape-recorded for accuracy in the retrieval of the information was reiterated.

To be involved in the study, consenting WLHIV were then requested to sign or thumbprint the version of the consent form appropriate to their language (in English, Ewe) (Polit and Beck, 2017:270). Some of them refused the written consent saying if what the researcher explained to them about privacy and anonymity were true, then they need not leave evidence of their participation behind in the form of signatures and thumbprints. They were willing to withdraw their verbal consent of participation if the researcher insisted on getting written consent. In those situations, they were allowed to proceed with verbal consent as previous literature and

experienced researchers agree this is acceptable under such circumstance (Gordon, 2000:235-236; Polit and Beck, 2017:271; Creswell and Creswell, 2018:89; Resnik, 2018:121). The preliminary paper and pencil face-to-face structured survey instrument (to screen for qualified participants) which was mainly about socio-demographics was administered to them by the researcher or her assistant. The set of questions also enquired of the participants' duration of using ARVs and whether they were currently attempting to have a child. The questions were devoided of self-identifying items such as name, address and other such related items. Those who were on ARVs for at least six (6) months and also desired or were making attempts to have a child within 24 months were then chosen to participate in an interview. Those who did not meet these criteria were politely discharged.

A face-to-face interview was conducted with each of the participants using the same semi-structured interview guide throughout. Where necessary, probing of participants was done using questions that were not on the guide. This happened when inadequate information was given or there was a need for clarification. Observations of gaps or inadequate clarification during transcription and immersion by the researcher also directed some of the probing questions asked subsequently. The interview sessions which lasted between 25 and 45 minutes were mainly in Ewe with few in the English language and a mixture of the two. The interviews were recorded on an audio-recorder that was specifically acquired for the project.

In the ART units, private rooms made available to the researcher were used for the interviews. This ensured much-needed privacy. The researcher kept what Gray (2018:441) called 'jotted notes' herself since the WLHIV frowned on the presence of a third party. This note was updated immediately after a session with each participant. It was a summary of important observations that may impact understanding and analysis of the data collected. Some observations noted in the book included mannerisms such as extreme anxiety or apprehension, attempts to hide their

identity on hearing others voices by turning their back to the door or lowering their heads, apathy, appearances like debilitation, amputation and other such related observations. On average, three interviews were conducted within the normal working hours of the ART units; from 8:00 AM to 5:00 PM on weekdays. In all, 38 WLHIV were interviewed in 12 hospitals between April and July 2019. However, 24 were analysed after eliminating those with shortcomings.

3.9.9.1 Data saturation

Data saturation is defined as a point in qualitative data collection process when no new concepts emerge but rather repetitive and redundant information. In this situation, no new information can be gleaned from the data being collection. This also signals the end of sampling thereby determining the sample size (Sparkes and Smith, 2014:42; Polit and Beck 2017:127, 1302). When the data being collected from the WLHIV was found to be repeating itself, the researcher drew the sampling and interviewing to a close (Sparkes and Smith, 2014:42).

3.9.9.2 Data analysis

The section A portion of the data collection instrument which was used to collect data on the socio-demographic and gynaecologic variables generated quantitative data while section B generated qualitative data. These two data sets were managed separately, hence, data analysis occurred in two folds.

The quantitative data were entered into a spreadsheet in Microsoft Excel for Mac 2019, version 16.28 for analysis by the researcher. Twenty-four entries were made, corresponding to the number of WLHIV whose interviews were analysed. To clean the data, the entries were checked for excess entries, missing values, blank cells; none was observed. Data were analysed

using simple descriptive statistics of frequencies and proportions. The results are presented under findings alongside that of the qualitative analysis later in this chapter.

Thematic analysis, one of the commonly used methods of analysing qualitative data, was adopted for analysing the textual data collected from interviewing WLHIV. It is the identification and description of explicit and implicit patterns of ideas (termed themes) in qualitative data about a research question (Guest *et al.*, 2014: 9; Braun and Clarke, 2006:4). It is described as a flexible method of analysis. Thematic analysis can be used with both realism and constructionism stances (Braun and Clarke, 2006:9). It, thus, is independent of theory and epistemology (Braun and Clarke, 2006:5; Braun and Clarke, 2014:1; Nowel *et al.*, 2017:2). Braun and Clarke (2014:1), in summing up literature on thematic analysis, noted that it is the most commonly used qualitative analysis method.

Thematising meaning from qualitative data is a core skill that is used in many other methods of analysing qualitatively (Guest *et al.*, 2014:10; Braun and Clarke, 2014:1). The researcher relates to the usefulness of thematic analysis in picking up the complexities of meaning in textual data. Likewise, the researcher also relates with the flexibility with which it allows for the sorting of data into relevant themes for interpretation, making it adaptable to different research questions in qualitative investigations such as determining people's knowledge, views, perceptions and experiences. Thematic analysis has been applied in psychology (Taylor and Ussher, 2001; Walsh *et al.*, 2019), paediatrics (Fielden, Sillence and Little, 2011), sports and exercise science (McAardle *et al.*, 2012), tourism (Walters, 2016), nursing (Gagnon and Roberge, 2012; Karlsen *et al.*, 2017) and education (Lehtomäki, *et al.*, 2016; Poulos and Mahony, 2008). The use of thematic analysis in the social and health sciences research is asserted (Guest *et al.*, 2014:10; Braun and Clarke, 2014:1). In this study, thematic analysis was applied to conceptualise the SC needs of WLHIV as expressed in individual interviews.

Like other methods of analysis, thematic analysis has some limitations. The credibility of thematic qualitative data analysis is questioned due to the perceived variability with its process and conduct (Braun and Clarke, 2014:1; Nowell *et al.*, 2017:2). Though, thematic analysis has been in use for several years across diverse fields of study, Braun and Clarke, (2014:1) observed that there was not a common format for its application. The authors, therefore, came up with a six-phase process which has been largely patronised for organised the presentation of the analysis procedure (Maguire and Delahunt, 2017:3353). Thus, the disadvantage was partly addressed through the adoption of the systematised step-by-step approach provided. The researcher also worked towards the trustworthiness of the analysis procedure by ensuring credibility, transferability, dependability and confirmability among others as exemplified by Nowell *et al.*, (2017:4) and elaborated under *rigour of the study*.

It is also cautioned that in the process of sorting data into broad themes for interpretation, nuanced or fine details may be overlooked (Braun and Clarke, 2014:1) - another disadvantage of thematic analysis. To minimise this occurrence, the researcher exercised the needed caution by engaging longer with participants and the data for greater familiarity. She also learned from the expertise of her supervisors through regular debriefing which occurred through correspondence as it might with co-researchers (Nowell *et al.*, 2017:4).

The approach to thematic analysis may be inductive or deductive. The former allows the researcher to induce themes from the data set while the deductive approach involves the researcher using a priori themes. The researcher may also use the semantic approach where the explicit content of the data collected is interpreted rather than the sub-textual deductions underlying the text of analysis (latent approach). The researcher adopted the stance of constructionism. She believes that what a WLHIV would consider as a need to conceive safely was not a definite thing that was already existing but would be constructed by each of them

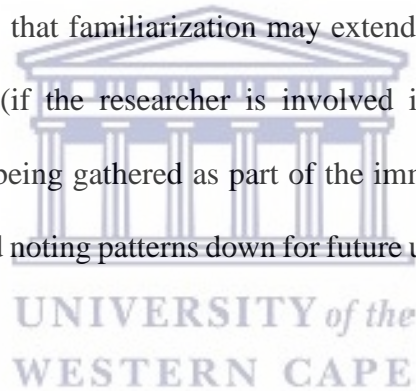
within the socio-cultural context in which she finds herself (Cresswell, 2014:38). Thus, this need would be constructed differently by each woman living with HIV.

More so, HIV infection being a stigmatised condition makes the WLHIV constantly aware of judgement hence were not outright or forthcoming with information on their conception practices; most tend to exhibit circumlocution until they are sure of a non-judgmental attitude (Wanyenze *et al.*, 2013:6; Mmeje *et al.*, 2016:13). With this assumption, the latent and inductive thematic analysis was adopted which fits with the constructionist's stance. Latent because the researcher examined not only what the participants said (surface meaning of the data) but the implicit also – the underlying ideas represented in the data. This version is also in tandem with the constructionist worldview of the researcher (Braun and Clarke, 2006:13).

The six iterative and interconnected phases as outlined by Braun and Clarke (2006) and adopted by the researcher are *familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report*. Though the stages of this approach appear linear, the analysis process was iterative and progressed in a back-and-forth rather than a straightforward fashion. The researcher was, all through, conducting the activities of data condensation, data display and conclusion drawing/verification as observed by Miles *et al* (2014:12). In the initial stages, data collection and the analysis process progressed concurrently until July 2018 when the former ended upon reaching data saturation - no new information was coming forth from the additional interviews (Morse, 1995:149; Creswell 2014:239). The analysis of data collected is outlined following Braun and Clarke's six phases of thematic analysis for clarity.

3.9.9.3 Familiarization with the data

Familiarisation occurs when the researcher becomes conversant with her script and has an overview of the range, depth and diversity of the data being dealt with (Gerrish and Lacey, 2010:435; Huberman and Miles, 2011:8; Gale *et al.*, 2013:3; Braun and Clarke, 2006:16). Braun and Clarke (2006:17) outlined this first phase of the thematic analysis to include data preparation. This phase included data handling and preparation for analysis i.e., transcription, translations and commencement of audit trails by naming the participants, files, folders and places of storage, both physical and virtual (Guest *et al.*, 2014:10). Being part of the data collection and preparation enhanced the researcher's immersion in the text. The researcher acknowledged with the authors that familiarization may extend to include the data collection process through transcription (if the researcher is involved in these activities) when one interacts with the information being gathered as part of the immersion process. During these processes, the researcher started noting patterns down for future use as suggested by the authors (Braun and Clarke, 2006:16).



3.9.9.4 Data preparation

At the stage of transcription, all audios of the interviews were transferred unto labelled files on the personal laptops of the researcher and her assistant daily with back-ups on designated and equally labelled hard drives to guard against inadvertent data loss. These password-set laptops and hard drives were accessible to only the researcher and her assistant. The files housing the transcripts were further locked with passwords to prevent unapproved access. Likewise, the hard copies of data (notebooks, printed material, photocopies) were placed in legibly labelled clear plastic files and kept in cabinets under lock and key either in the researcher's apartment or her assistant's (Gray, 2018:187). The research assistant responsible for the qualitative aspect

of the study was a medical sociologist. He holds a master's degree. The thesis for his latest degree was on the socio-cultural context of HIV which employed a qualitative approach. On account of this, he had previous experience with transcription and was conversant with HIV information, health and health-related terminologies. He was involved to assist with data preparation for analysis.

All audio-taped interviews, mostly in Ewe – the local dialect of the Volta Region, were transcribed (handwritten) verbatim (Gale *et al.*, 2013:4) into notebooks by the researcher and her assistant. This was done alongside ongoing data collection by the researcher. The two transcribers involved then swapped their notebooks and audios and went over each other's transcriptions. Thus, listening to the tapes, each person went through the others write-up (Braun and Clarke, 2006:19). Reconciliations were made where necessary through the insertion of omissions, removal of repetitions and correction of misheard words and phrases. The data was then typed and edited by the researcher using her personal computer. A professional in the language department of was approached for translation.

Squires (2009:4) asserts the importance of translator and translation in the research process indicating they influence data collection and results and therefore rigour; specifically, credibility, dependability and transferability. The author, recommends that the translator should have experiential competence in the field and have a correspondingly notable credential in sociolinguistics. With this understanding, the researcher approached a personnel from the Bureau of Ghana Languages – Ewe Division – who also co-owns a private translation enterprise for translation of the data from Ewe into English (Appendix 11). The product was a soft copy of the English transcript. The researcher and her assistant again read over the whole English version of the script comparing it with the vernacular (Ewe) versions for accuracy. It was observed that, generally, content and meaning were retained. A few mistakes, mainly with

the medical terms, were observed. The language personnel used ‘germ’ instead of HIV and ‘germ counting’ instead of viral load. These were corrected and the script was ready for the next steps in the analysis process. The researcher sent a copy of the prepared script to her supervisors for assessment.

As observed by Saldana (2013:100) and Braun and Clarke (2006:16) reading over and over the script deepened the researcher’s familiarization with the textual data. She identified words, phrases and issues that recurred which were noted down. These were later used as codes, thus employing open coding. This (open coding) ensured open-mindedness in reducing the data collected and not imposing a priori codes. That process ushered in the second phase - coding.

3.9.9.5 *Generating initial codes*

The coding phase entails the application of a tag or label to a portion of interpreted data, which is a meaningful unit. It is the fundamental task of data reduction in qualitative analysis. This label termed a code maybe a word or a short phrase (Saldana, 2013:3). Coding may be open to the researcher’s conceptualization or pre-defined (Gale *et al.*, 2013:4). It aims at classifying the data collected so that progress can be made with the other stages of analysis. At this stage, the researcher applied open coding as indicated earlier. It is the application of codes that emerge from the data being analyzed.

Conceptually similar events, ideas, interaction or actions were labelled with a code. Thus, reading the transcript carefully, she coded the transcripts of the informants one after the other. The meaningful units of analysis were phrases, sentences and paragraphs but not individual words (Cobin and Strauss, 1990:12). Using the review feature of Microsoft Word™ the transcripts were coded (Bree and Gallagher, 2016:2811). By this means, the researcher generated many codes at this point, working through all the transcripts (Braun and Clarke,

2006:18). These codes were captured at the right margins of the printed transcripts (Appendix 12A). After coding all the transcripts, they were copied and pasted into another word document and then arranged alphabetically with a resultant long list of codes which was used in the second phase of the analysis (Braun and Clarke, 2006:19).

3.9.9.6 Searching for themes

A theme is a phrase or sentence that usually captures something important in the data being analysed concerning the research question. It depicts a pattern that is meaningful in the data being analyzed. A theme is created by collating codes based on a determined characteristic (Braun and Clarke, 2006:10). At this level, the analysis essentially focuses on grouping the codes developed based on some criteria (such as similarity or description of an idea or concept). Thus, themes are developed from codes. A collection of codes are categorised in different combinations into potential sub-themes and themes.

The researcher collated codes that were similar and point to a similar thing about SC needs of WLHIV into categories first. These categories are then grouped into sub-themes and then into themes. Taking disclosure, the codes on disclosure were first categorised into *disclosure intent*, *disclosure attempt*, *consequences of disclosure* and *inability to disclose*. These were put together under a 'bigger' category *disclosure issue* (Appendix 12B). Other similar categories of this level are *conception difficulty*, *conception strategies used/needed* and *wellbeing, partner issue*. Categories at this level, alone or combined with others, become sub-themes or themes. Conception difficulty is a sub-theme called *need for assistance with infertility* under the main theme *system driven strategy for safe conception* at the end of phase five of the analysis.

In the process, codes and categories that were too similar to stand separately were merged. A 'miscellaneous' theme was created for those codes that could not be placed into any theme

then; they were for review later (Braun and Clarke, 2006:20; Maguire and Delahunt, 2017:3356). The end product of this phase of analysis is a grid in Microsoft Word™ with candidate themes and sub-themes generated as headings and sub-headings respectively with the corresponding codes pooled under them (using the copy and paste feature) for easy referencing and comparison across themes in the next phase of the analysis. The product of this stage was used for the next phase of the analysis called the reviewing of themes (Maguire and Delahunt, 2017:3357; Braun and Clarke, 2006:19-20). Throughout this process, the researcher toggled among the codes, themes generated and the textual data.

3.9.9.7 *Reviewing themes*

This entails activities that ensure that the themes generated are representations of the data analysed. It is a continuation of the third phase at a refined level. It is to allow for modifications where necessary, in the candidate themes. Braun and Clarke (2006:40) described ‘two levels of reviewing: reviewing at the level of codes generated and then reviewing themes to reflect the data set being analysed. To do this, the researcher matched up the components of the grids – comparing a proposed theme with the codes pooled under it. Among the individual codes pooled under a theme, the researcher also read through them over and over to ensure coherence; that each code was related to the other and belonged to the group.

Similarly, the researcher compared the candidate themes generated with the textual data coded to determine if the themes fit the contexts from which the codes were induced and vice versa. This is to determine whether a proposed theme represents the data and also whether the data in turn is supportive of the theme. The researcher also ensured the themes were speaking to the concept of the research objective, which was the SC needs of WLHIV (Nowell *et al.*, 2017:9). Four main themes were developed for definition in the next phase (See Table 5-2 under chapter

five). Braun and Clarke (2006:40) cautioned vigilance for coherence in the codes pooled under each theme. This was the watchword as the researcher read over and over the themes and corresponding codes as well as the original textual data to refine the themes. The revision helped the researcher to have a picture of how the different parts fit together to project the SC needs of WLHIV.

3.9.9.8 Defining and naming themes

This is the fifth phase of the thematic analysis process. At this point, the researcher presented what each theme was about in connection to the other themes and the research questions. This was in the form of a narrative gotten through a coordinated piecing together of the bits of information captured in the individual codes pooled under each theme concerning the original textual data and the research question. In this way, the researcher was “identifying the ‘essence’ of what each theme is about” (Braun and Clarke, 2006:22) singly and in connection with others, detailing its scope and focus in the narrative produced from the analysis. (Braun and Clarke, 2006:23; Braun and Clarke, 2016:13; Maguire and Delahunt, 2017:11). At this phase, Braun and Clarke (2006:23) advised that sub-themes may be considered for a theme that is overly large and complex to structure it and also prevent excessive lumping in the unfolding narrative. This advice, the researcher found useful and implemented. For each of the four themes developed viz: *confidential and HCW-initiated communication, need for education on safe conception strategies and couple-based education on the safe conception and system-driven strategies for safe conception*, each had at least two sub-themes.

The working names of the themes were finalised reflecting that they are identified as SC needs, in relation to the research question (Braun and Clarke, 2006:22; Braun and Clarke, 2016:13; Maguire and Delahunt, 2017:11). To ascertain whether the definition of the themes was clear

and complete enough, the researcher sought the opinion of her two supervisors who acted as ‘experienced team members’ and vetted them (themes) (Nowell *et al.*, 2017:4). Going through the data with the defined themes and being satisfied that no section of the text was left that could produce a relevant theme in addition to the ones deduced, the researcher moved to the next stage of the analysis thus reporting the process (Braun and Clarke, 2006:22).

3.9.9.9 Report writing

This is the final phase of the analysis process. It is a succinct presentation of the procedure and its outcome. Braun and Clarke (2006:23) advised that the report must be a “concise, coherent, logical, non-repetitive and interesting account of the story the data tell within and across themes.” In the result section, the researcher emphasised points with excerpts that succinctly captured them (sub-section 5.1 of chapter five).

3.9.10 Rigour

Rigour, also known as trustworthiness in qualitative research, refers to measures taken to achieve findings that reflect the situation as experienced by the participants. It is expressed in terms of credibility, dependability, confirmability and transferability (Gray, 2018:182). Braun and Clarke, (2006:27) observed stated that “rigour lies in devising a systematic method whose assumptions are congruent with the way one conceptualises the subject matter”. As follows, the researcher outlined her assumptions and activities that guided the study and ensured rigour.

3.9.10.1 Credibility

Credibility occurs when data collected is accurately represented thus presenting the true picture of the phenomenon studied. This is achieved by adopting a study design appropriate for the topic under investigation with correspondingly approved and matching methods and

techniques in data collection and processing (Gray, 2018:182-183). The researcher ensured credibility by adopting exploratory qualitative study which enabled her to delineate the SC needs of WLHIV. Also, the semi-structured interview method, as well as the thematic analysis, are well-documented method and technique respectively, which matched well the design. Individually and as a combination of the research process, these design, method and technique, are widely used and acknowledged in most fields of social research; including the health sector. More so, the researcher worked under the tutelage of experienced and competent supervisor and co-supervisors who were themselves, qualitative researchers.

Being a nurse with some background in reproductive health, she was able to establish rapport and build trust with informants as well as direct the conversation in context to yielded useful and rich data. Coupled with prolonged engagement in the field where data was collected over 4 months, the researcher was able to collect adequate data. Also, conducting the interviews for WLHIV of different backgrounds in the 12 selected facilities, of different healthcare delivery levels (primary and secondary) across the Volta Region (space triangulation) made room for variety and richness in the descriptions in the data (Gray, 2018:84; Frambach *et al.*, 2013:552).

Also, adhering to appropriate interviewing procedures conferred credibility on this study. The researcher interviewed participants who, out of their own volition, agreed to be involved in the study eliminating coercion. This, the researcher believes, ensured that the informants gave relatively accurate accounts of their perspectives since they were not coerced. During the interviews, the researcher explained what the findings would be used for – appealing to the WLHIV to help themselves by providing truthful accounts regarding the questions asked.

Probing was also used, often with follow-up question which was not on the interview guide to get a better understanding of the topic being investigated. Also, paraphrasing, for participant

affirmation during the interview ensured that the researcher was getting the message being communicated accurately, meeting the requirement for member checking (Roller and Lavrakas, 2015:361). Using the recorder ensured that the informants' messages are reliably captured for analysis. During data processing for analysis, meticulousness with verbatim transcription, engaging a competent and qualified translator all ensured that the content is retained as much as possible to ensure credibility (Squires 2009:4).

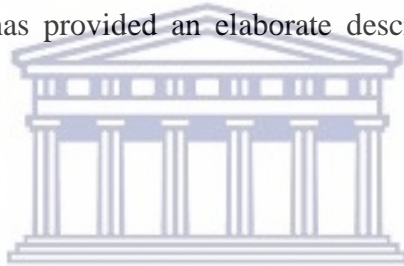
During data analysis and indeed the whole study, the continual coaching and mentoring from the researcher's supervisors in the form of feedback, suggestions and discussions ensured that the researcher was on course regarding the appropriate application of the rubrics of the chosen design and method (Jensen, 2012b:3). The researcher also kept notes (reflexive notes, descriptive field note and audit trails) from the commencement of fieldwork through to the writing of this dissertation. Going over the notes kept her in constant awareness of her effect on the research process. This helped to be consistent with her assumptions and decisions. Further, the researcher included some verbatim excerpts from the participants in the dissertation report, giving credibility to the outcomes. Since the researcher did not take detailed particulars of the WLHIV to ensure anonymity, she could not trace any of the women for further member checking.

3.9.10.2 Confirmability

Confirmability requires that the researcher provides evidence that his/her findings are rooted in the participants' construction and that the findings match the data generated (Given, 2012:2; Frambach *et al.*, 2013:552). The researcher carried out an extensive literature review throughout the entire span of the study to ensure that she was abreast with information on the subject. This enabled her to ground her study on acceptable principles and assumptions

Frambach *et al.*, 2013:552). As much as possible, the researcher followed the protocol submitted which guided data collection through to analysis.

The researcher also kept and maintained a running journal of her decisions and actions during data collection and analysis, among others, that yielded the findings. The journal, also called audit trail, was used to describe the research process to ensure that reviewers are kept abreast with proceedings that produced the findings. The researcher's supervisors acted as independent reviewers and expert consultants who guided the study through regular debriefing (Frambach *et al.*, 2013:552). As such, they verified that the research process and interpretation of data followed due course. They had access to the transcript and the findings from the study. Also, in this report, the researcher has provided an elaborate description of data collection and analysis.



3.9.10.3 Dependability

Dependability implies reproducibility of the study. To ensure this, interviewing of WLHIV and analysis were ongoing concurrently which informed further data collection. The concurrency also enabled iterative data analysis; thus, the researcher re-examined the data using insights that came up during analysis to determine whether the objective that informed the interview would be achieved with the data collected. Also, data was continued until no new themes emerged with new informants (data saturation was reached) (Frambach *et al.*, 2013:552). Further, a detailed description of the study design, method, procedure, instruments used, translation as well as context of the study are provided in detail in this dissertation report. Also, field notes and notes on analysis were kept on the qualitative research process. The researcher was also transparent with her research process activities (Jensen, 2012c:2).

3.9.10.4 Transferability

Transferability infers informed applicability of the study findings to different contexts. This is made possible with the provision of adequate information on the scope of the study. Also, a rich, thick and detailed description is given of the setting, a phenomenon studied target population, informants' characteristics, and steps involved in conducting the study alongside the study findings to inform transferability cautiously (Frambach *et al.*, 2013:552; Gray, 2018:185).

3.10 REFLEXIVE BRACKETING

Reflexivity entails the examination of one's own values, beliefs, judgements and practices in the course of a study and how they may have impacted the process (Hammond, 2017). Hammond (2017) opined that for qualitative research endeavours that demand longer engagements (such as this PhD thesis), reflexivity cannot be left out. It enables researchers to examine their research activities and provide rationale for their research decisions towards relevant outcomes (Darawshesh, 2014:526). At the same time, it is crucial for the qualitative research to ensure bracketing. Polit and Beck (2017:833) defined bracketing as a process whereby a researcher, through deliberate effort, identify and set aside his/her presuppositions in order to study a phenomenon of interest. These presuppositions include personal values, experiences, culture, academic and scientific ideas (Baksh, 2018:47; Gearing, 2004:1433). Some of these presuppositions (academic and scientific ideas) inform and shape our worldviews, ontology, epistemology and methodologies.

Researchers conduct studies through choice of a particular paradigmatic which is the embodiment of the assumptions and values they ascribe to (McNarry *et al.*, 2018:4). The researcher holds the ontology of multiple realities. These realities, the researcher believes, are

constructed in different ways. The researcher also ascribes to the worldview of pragmatism whereby the nature of research questions determines the method of enquiry. While quantitative research question demands that the researcher is objective, neutral and detached, a qualitative enquiry requires subjective and interactive roles. Because the researcher is an instrument (Creswell and Creswell, 2018:181) in the knowledge construction process, the researcher's characteristics may influence the research process (Pezalla *et al.*, 2012:4). To minimize this, there is the need for bracketing, as it improves trustworthiness (Darawshesh, 2014:561).

In this study, the researcher adopted reflexive bracketing. It is one of the five typologies of bracketing described by Gearing (2004:1435). Reflexive bracketing focuses on setting aside personal ideas (personal or internal suppositions) such as personal values and judgements about a phenomenon to be investigated. However, external suppositions such as the context, culture and the environment of the phenomenon are not bracketed. The researcher agrees that safe conception, its uptake and utilization cannot be studied outside the context, culture and environment of its stakeholders. However, the researcher's internal presuppositions must be held in abeyance as much as possible. The essence of bracketing is trustworthiness. However, total bracketing is not possible (Sparkes and Smith, 2014:38, 129). It requires expression about past experiences and how they shape the research process (Creswell and Creswell, 2018:260; Ahern, 1999:408-409)

The researcher is a nurse by profession and a nursing educator. The researcher had previously visited the health facilities involved in the study for fieldwork supervision of trainee nurses and was an acquaintance prior to the study. Also, the researcher had taught some of the nurses, midwives and nurse-midwives at these facilities. These acquaintanceships could have facilitated access to these facilities for the study and how she navigated her research journey.

Against this backdrop, the researcher ensured that the selection of facilities for the study was

based on participants' availability but not a vested interest in the outcome of the study. The researcher also ensured that self-introduction was done depicting her as a student researcher in the context of her studies but not as a nurse, an educator or an employee/representative of any of the nursing training institutions she ever worked in. Self-identifying items and paraphernalia suggestive of her position as a nurse and an educator such employer vehicles and branded clothing were avoided. Also, during interviews and FGD sessions, research participants were made aware of the status of the researcher as a student. These were meant to lessen power imbalance (Creswell and Creswell, 2018:89; Ahern, 1999:408).

The researcher kept a journal throughout the research process for taking notes. She also engaged in memoing. These were frequently revisited to enable regular self-examination. The memos aided the researcher to situate herself in the research activities (the interviews, FGD and data analysis). This helped the researcher to reflect on how she engaged in data collection and analysis. The reflection gave the researcher insight into her feelings and reactions which were checked against the research activities for transparency and credibility (Creswell and Creswell, 2018:260; Tufford and Newman, 2010:7).

3.11 ETHICAL CONSIDERATIONS

Ethical considerations in research refer to a collection of principles and values that guide research activities to ensure safety of the subjects and credibility of research findings. They are issues that must be carefully thought through and used to guide the research process from its commencement to completion (Polit and Beck, 2017:256; Creswell and Creswell, 2018:75). All stakeholders in research publication are expected to report on ethical issues (COPE, 2012, 2021).

Cognizant of these issues, the researcher applied the ethical principles for research as outlined by Polit and Beck (2017:258-262) and Creswell and Creswell (2018:85). These include beneficence, respect for human dignity and justice according to the Belmont Report. Each of these principles has multifaceted aspects. According to Polit and Beck (2017:258), beneficence goes with non-maleficence, and requires that the researcher “minimizes harm and maximizes benefits” to the study participants. It entails protection from harm, discomfort and exploitation. Respect for human dignity entails voluntary participant participation based on full disclosure. Justice includes the right to fair treatment on one hand and the right to privacy on the other.

Protection from harm entails consideration for all measures that need to be put in place to avoid, prevent or minimize physical, psychological, social and financial harm to the participant. To ensure these, it is important that the research design is appropriate and should be executed by qualified researcher(s) who are competent in the field of the proposed study (Polit and Beck, 2017:259). The other facet of beneficence (protection from exploitation) also requires that participation in a study does not place the participants at a disadvantage where the outcomes of the research are maximized at their expense. It also requires a prudent use of participants time and information among others.

Respect for human dignity, as an ethical principle, requires that study participants are treated as independent being must be allowed to decide and act voluntarily (termed self-determinism). This implies that participants are not coerced in any way to participate in a study. Also, respect for human dignity necessitates full disclosure. This means the researcher needs to fully explain to each participant’s understanding everything they need to know to give an informed consent. The explanation should cover the purpose of the study, risks, benefits, the researcher’s as well

as subject's responsibilities, right to withdraw and any other information that is deemed necessary.

The third ethical principle considered in this study is justice. Also, a multidimensional principle, it deals with the rights to fair treatment and privacy. The right to fair treatment is about equitable distribution of both the burdens and benefits of research. It bears on participant selection in a way that neither exploit nor leave behind certain populations especially the vulnerable, marginal or minority groups (Polit and Beck, 2017:262-263). Participants' privacy right refers to their state of being free from public attention. Ethical considerations on this principle must cover protection of physical, decisional and informational privacy. It includes confidentiality which refers to protection of participant's private information (Resnik, 2018:91).

To meet these ethical issues, the researcher applied for and obtained approval for study from Institutional Review Boards which are mandated to ensure safety of participants and credibility of research (Resnik, 2018:91; Creswell and Creswell, 2018:89). The review boards were the Biomedical Science Research Ethics Committee of University of the Western Cape, South Africa (Appendix 5A) and the Ghana Health Service Ethics Review Committee (GHSERC) of Ghana. The ethical clearance certificate from the GHSERC was used to obtain permission from the various gatekeepers at the lower-level hierarchies of health facilities. These included the Volta Regional Health Directorate and then the participating hospitals, their departments/units and clinics. At the ART units, the ethical clearance certificate and accompanying introductory letters the researcher received from the regional level were used to secure permission from the unit managers for the data collection procedures (Polit and Beck, 2017:140).

Several other measures were put in place to ensure that the study was conducted within the confines of research ethics. To ensure informed consent, the various categories of participants were educated on the purpose of the research, risks and benefits, autonomy and confidentiality regarding the data that would be collected from them. Education was also given on their roles, the need to record the information (during interviews and focus group discussion) and publication of research findings. They were also educated on the right to withdraw or withhold information they do not wish to share (Polit and Beck, 2017:269). They were educated in a language each prospective participant understood well (Resnik, 2018:115). They were also given the written information sheet (Appendices 8B and 8C). However, some of the participants chose not to keep the information sheet with them and left it with the researcher, stating the verbal explanation was sufficient for them. After a written consent was obtained, the data collection process was initiated.

However, few participants expressed fear towards signing/thumbprinting consent form. They questioned the wisdom in leaving a uniquely identifying sign such as their signatures/thumbprints behind if the data collection procedure was truly anonymous as the researcher explained. These participants indicated their willingness to participate only on condition that their verbal consent, which leaves no trace of their identification, was accepted. Previous literature and experienced researchers concur that verbal consent is an acceptable form of consent under certain conditions such as the fear expressed by the participants, hence the verbal informed consent was taken (Gordon, 2000:235-236; Polit and Beck, 2017:271; Creswell and Creswell, 2018:89; Resnik, 2018:121).

During data collection, only the information needed (as per the ethical clearance obtained) was collected. The researcher was sensitive to participants' expressed needs. Both auditory and visual privacy were ensured by using the unit managers' offices for the interviews. The

participants were also encouraged to verbalize emotional stress for professional psychological attention if they experience any. A form was designed for their referral to the psychologist (Appendix 20). However, none expressed such need.

Hard copies of the data collected from the participants were locked in cabinets accessible to the researcher only. The soft copies of the data were also stored on the researcher's personal computer with password protection to prevent unwanted access. During data analysis and reporting, codes were used to identify participants to ensure privacy and anonymity (Creswell and Creswell, 2018:89).

3.12 CHAPTER SUMMARY

This third chapter described the methodology of the empirical study where both quantitative and qualitative data were collected concurrently. A survey among the ART unit HCWs through total sampling in 21 health facilities produced the quantitative data which was prepared and analysed using SPSS. For the qualitative data, selected WLHIV were interviewed at purposively sampled ART units. Following Braun and Clarke's outline of six iterative but interconnected phases of reducing qualitative data from interviews, analysis was done. The results from the analysis of both the quantitative and qualitative data are presented in the following chapter, the second of the three chapters contained in section two.

CHAPTER FOUR: QUANTITATIVE RESULTS, DISCUSSION AND CONCLUSION

4.1 INTRODUCTION

This is the second of the three chapters under section two. It features the findings from the cross-sectional survey carried out on HCWs which assessed their knowledge, attitude, self-efficacy and interest in providing SC education for WLHIV who access services at these facilities.

4.2 RESULTS OF THE SURVEY

The results are on 94 completed questionnaires by HCWs from 21 ART units. The four latent constructs involved were knowledge, attitude self-efficacy and interest in SC education of WLHIV.

4.2.1 Demographic characteristics of the participants

The majority of the HCWs attending to persons living with HIV were females; there were only 10 male nurses representing 11 per cent of the participants while females were 84 accounting for 89%. The mean age of the participants was 34.07 years with a cumulative of about 81 per cent of them falling between ages 20 and 39. Thus most of the HCWs attending to WLHIV at the various facilities were young with matching relatively low years of working experience.

Seventy-one per cent (71%) had only 1 – 5 years working experience with persons living with HIV. The average years of working experience with persons living with HIV was 4.13 years. Regarding the level of education, only 13 per cent (n = 12) of the participants were degree holders. The rest either held diploma (n = 40, 42%) or were auxiliary nurses and midwives (n

= 42, 45%) with certificate level as their highest qualification. The data also showed that only 19% (n = 18) of the HCWs reported having a relative living with HIV.

Table 4-1: Socio-demographic characteristics of the participants

Variable	Number	Percentage
Number of participants (n)	94	100%
Gender		
Male	10	11%
Female	84	89%
Age bracket (years)		
20-29	30	32%
30-39	46	49%
40-49	10	11%
50-59	08	09%
Religion		
Christianity	92	98%
Islam	02	02%
Marital Status		
Single	37	39%
Married	56	60%
Divorced	01	01%
Category of Nurse		
Auxiliary Nurse/ Midwife	24	26%
Registered Nurse/ Midwife	69	73%
Missing	1	01%
Education (Highest Education)		
Certificate	42	45%
Diploma	40	42%
B.Sc./BA/B.Ed.	12	13%
Experience in working with WLHIV		
1-5 years	67	71%
6-10 years	17	18%
11-15 years	07	08%
Missing	03	03%



4.2.2 Descriptive statistics

The HCWs have inadequate SC knowledge and poor attitude towards educating on SC. Only 29 per cent and 32 per cent of the HCWs have above-average knowledge, and attitude (motivation) towards SC (Figure 4-1).

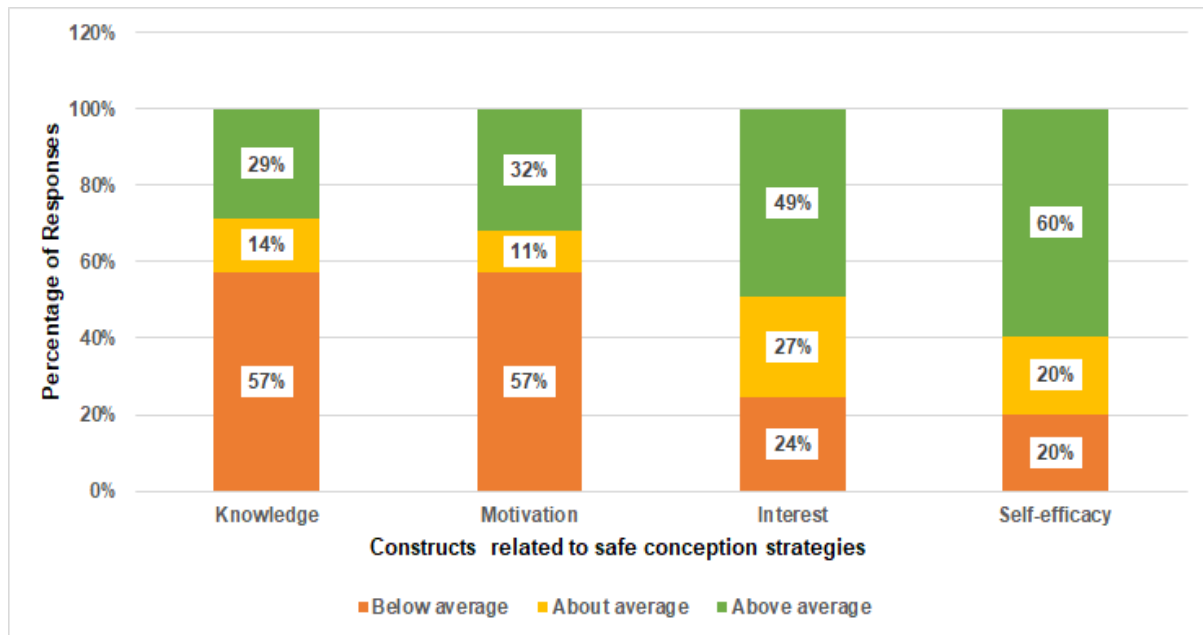


Figure 4-1: HCWs' knowledge, attitude (motivation), interest and self-efficacy regarding safe conception.

Comparatively, they fared better on self-efficacy and interest towards SC education. More nurses (60% and 49% respectively) had above-average interest and self-efficacy towards performing SC education. This trend is seen in the means measures tabulated in Table 4-2.

Taken individually, HCWs were found to have above-average knowledge and attitude (motivation) for these three SC strategies: TUI, and ART and STIs (Figures 4-2 and 4-3). But their self-efficacy and interest for SC education were found to be high for more than these three strategies (Figures 4-4 and 4-5), suggestive of their willingness to participate in a training activity to remediate the deficits found in knowledge and attitude. It was also observed that above 80% of the HCWs believe that their colleagues and managers endorse SC education. Hence, their poor attitude towards SC education may not stem from there (Figure 4.3).

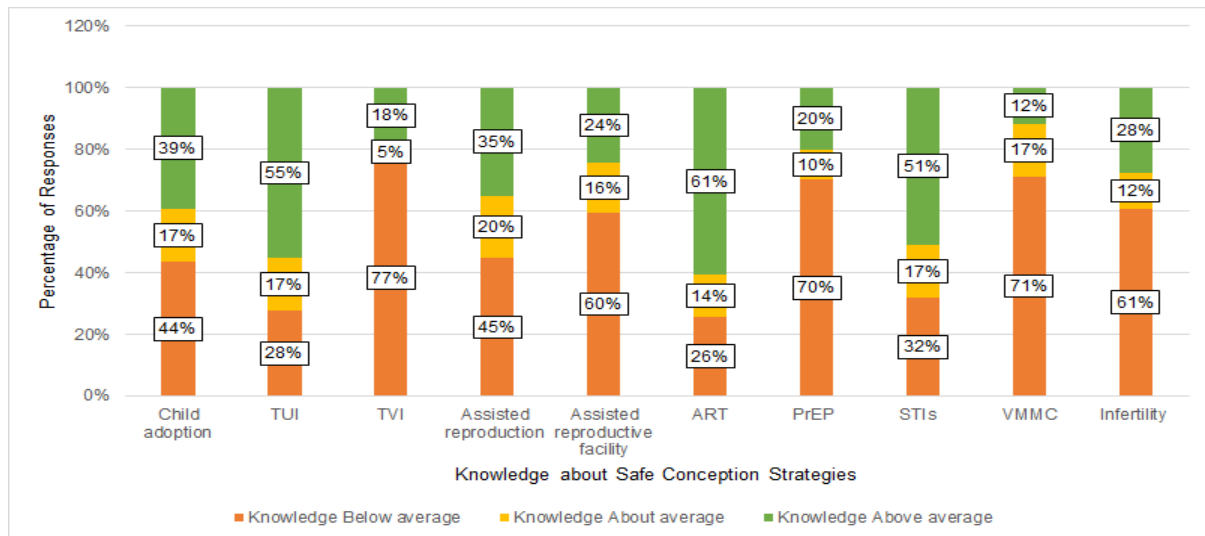


Figure 4-2: HCWs' knowledge on individual safe conception items.

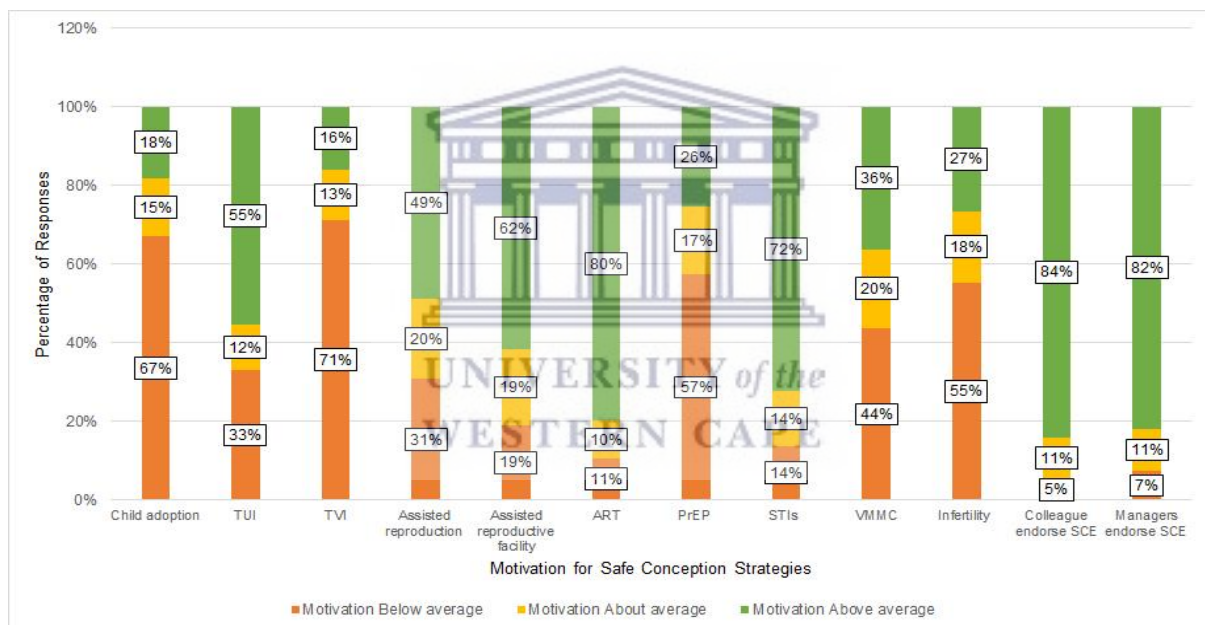


Figure 4-3: HCWs' attitude (motivation) on individual safe conception items.

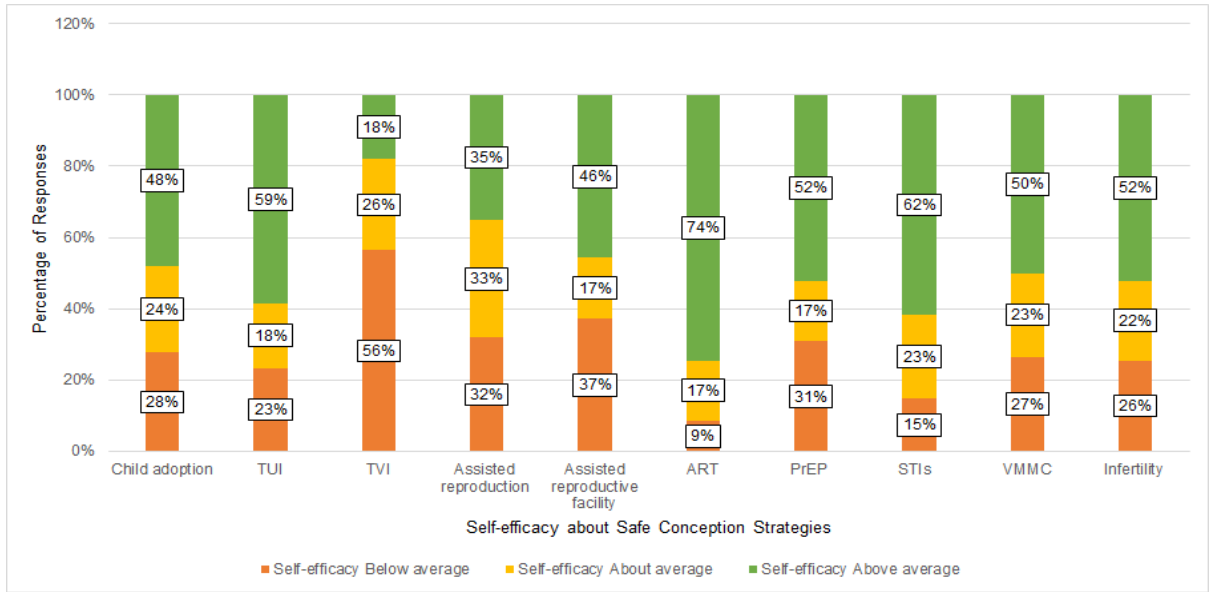


Figure 4-4: HCWs' self-efficacy on individual safe conception items.

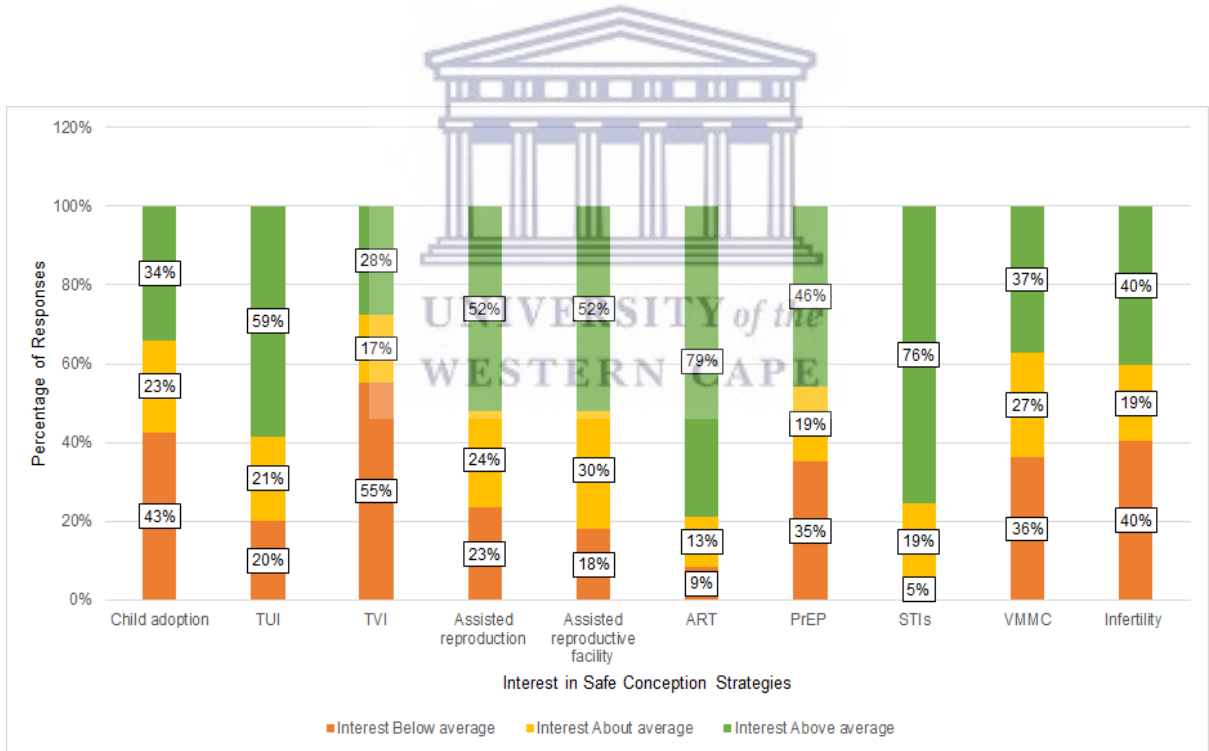


Figure 4-5: HCWs' interest on individual safe conception items.

From Table 4-2, the mean measures of HCWs' knowledge, attitude, self-efficacy and interest were: 2.27; 2.96; 2.38 and 3.28 respectively out of the scale of 5. Further, standard deviations as high as 1.38 and 1.03 showed a reasonable level of variability among nurses in terms of their knowledge, attitude, self-efficacy and interest in providing a safe conception for WLHIV. This is further confirmed with high values of the range. However, from Table 4-3, the correlation coefficients among the four variables are all statistically significant at $p < 0.05$ (99 CI level).

Table 4-2: Descriptive statistics of HCWs' knowledge, attitude, self-efficacy and interest towards safe conception

Statistics	Knowledge	Interest	Attitude	Self-efficacy
N	94	94	94	94
Mean	2.27	2.96	2.38	3.28
Median	2.11	2.99	1.73	3.38
Std. Deviation	1.03	0.98	1.38	0.98
Range	3.46	3.38	3.94	3.57
Minimum	0.87	0.86	0.99	0.90
Maximum	4.33	4.24	4.93	4.46

Table 4-3: Correlation coefficients of knowledge, attitude, self-efficacy and interest

Variables	Knowledge	Interest	Attitude	Self-efficacy
Knowledge	1.000			
Interest	.493**	1.000		
Attitude	.392**	.449**	1.000	
Self-efficacy	.336**	.633**	.312**	1.000

***. Correlation is significant at the 0.01 level (2-tailed).*

4.2.3 Results of hypothesis testing

Having satisfied validity, reliability and multivariate assumptions, the data were analysed to assess the HCWs' knowledge, attitude, self-efficacy and interest for providing safe conception education.

4.2.3.1 Baseline assessment of HCWs' knowledge, attitude, self-efficacy and interest

To assess the baseline estimates of HCWs' knowledge, attitude, self-efficacy and interest, the following hypothesis was formulated and tested:

H₁: The current level of HCWs' knowledge, attitude (motivation), self-efficacy and interest towards safe conception of WLHIV is significantly above average.

To test this, one sample t-test was used with the average point set at 2.5 since all latent reflectors were on the scale of 1 – 5; hence the test value (cut off) = 2.5. The results are presented in Table 4-4. The results reveal that HCWs' knowledge about SC strategies was significantly below the average cut off value. This is indicated by a mean difference of -0.227 with $t = -2.136$, $df = 93$ at 95% CI = (-0.438, -0.016) significant at $p = 0.035$. The results indicated that HCWs had some level of knowledge but may not be significant enough to impact their SC education to WLHIV.

On the contrary, their level of interest and self-efficacy were significantly higher than the average cut off at $p < 0.001$. This showed that despite the lower level of knowledge, their level of interest and confidence towards providing SC education to WLHIV were significant; implying that a boost in knowledge on the subject by way of training could significantly improve SC education by HCWs.

The mean difference of -0.123 with $t = -0.868$, $df = 93$ at 95% CI = (-0.405, 0.159) for attitude showed a poor attitude towards SC as the value was lower than the average cut off, although this was not significant at $p = 0.388$. It should be noted that the two critical variables – knowledge and attitude – were found to be below the average cut off values, therefore necessitating some intervention. Thus, though the HCWs had expressed high interest and confidence in their ability to provide SC education, their knowledge and attitude were far below average. The poor attitude was mainly towards home insemination. Thus, a SCTP to improve knowledge, attitude and skill will provide the necessary avenue for improved SC education to WLHIV.

Table 4-4: Correlation coefficients of Knowledge, Attitude, Self-efficacy and Interest

Variable	Test Value = 2.5				95% Confidence Interval of th	
	t	df	P value	Mean Difference	Difference	
					Lower	Upper
Knowledge (K)	-2.136	93	0.035	-0.227	-0.438	-0.016
Interest (I)	4.590	93	0.000	0.462	0.262	0.662
Attitude (M)	-0.868	93	0.388	-0.123	-0.405	0.159
Self-efficacy (C)	7.686	93	0.000	0.776	0.576	0.977

4.2.3.2 Direct and mediated effects on interest towards providing safe conception education

Two hypotheses were formulated in this regard. They were:

H₂: *There is a significant direct effect of HCWs' knowledge and attitude (motivation) on their self-efficacy and interest in providing safe conception education to WLHIV.*

H₃: *Self-efficacy significantly mediates between HCWs' knowledge, attitude (motivation) and their interest in providing safe conception education to WLHIV.*

To determine the direct and mediated effects as stated in hypotheses 2 and 3, a structural equation model was developed and measured. The model is presented in Figure 4-6.

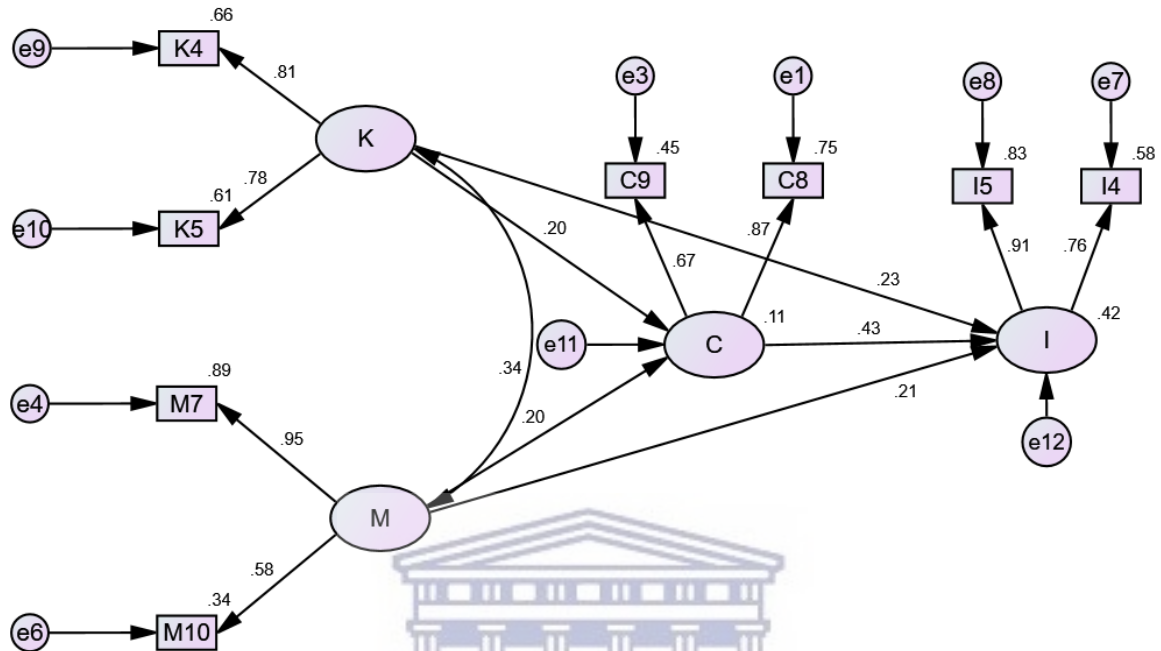


Figure 4-6: Structural Equation Model showing direct and mediated effects on interest towards providing safe conception education.

Table 4-5: Standardised Estimates of regression paths in the causal structural model

Regression Path	Std Estimate	Lower Limit	Upper Limit	P	Std. Error	Critical Ratio
Self-efficacy (C) <--- Knowledge (K)	0.205	-0.119	0.560	0.296	0.134	1.433
Self-efficacy (C) <--- Attitude (M)	0.200	-0.268	0.433	0.321	0.110	1.370
Interest (I) <--- Self-efficacy (C)	0.430	0.121	0.669	0.024	0.146	2.827
Interest (I) <--- Knowledge (K)	0.233	0.008	0.541	0.040	0.116	1.809
Interest (I) <--- Attitude (M)	0.209	-0.047	0.521	0.099	0.098	1.542

As required in all structural equation modelling, fit indices must be satisfactory before results of the model can be regarded as reliable. From the analysis, the results: Chi-square = 14.505; df = 14; relative chi-square = 1.036; CFI = 0.998; IFI = 0.998; TLI = 0.995; RMSEA = 0.020;

PCLOSE = 0.629; SRMR = 0.0454 all show that the model very well fits the dataset and that the results are reliable.

4.2.3.3 Direct effects of knowledge, attitude and self-efficacy

From the results in Table 4-5, knowledge has a significant impact on interest with $r = 0.233$ at $p = 0.04$. This implies that a boost in knowledge will result in a significant increase in interest at about 23 per cent. Similarly, self-efficacy has a significant impact on interest with $r = 0.430$ at $p = 0.024$. However, attitude did not have a significant impact on interest and neither did attitude have a significant impact on self-efficacy.

4.2.3.4 Mediated effects via self-efficacy

Table 4-6: Standardised Estimates of mediated paths in the causal structural model

Mediated Regression Path	Estimate	Lower	Upper	P
Interest <--- Self-efficacy<--- Knowledge (K)	0.079	-0.033	0.415	0.264
Interest <--- Self-efficacy<--- Attitude (M)	0.062	-0.037	0.19	0.136

Self-efficacy mediation between knowledge and interest was estimated at 0.079 but not significant given $p=0.264$ (greater than 0.05). Similarly, self-efficacy mediation between attitude and interest was estimated at 0.062 and was not statistically significant at $p=0.136$. The results show that self-efficacy is not an important variable in the framework intending to promote SC education. Coincidentally, self-efficacy has the highest mean at 3.28, among the four variables (see Table 4-6).

4.3 SUMMARY OF FINDINGS

- The level of HCWs' knowledge and attitude showed that there was need for improvement in order to significantly boost their impact on interest in providing SC education to WLHIV.
- Given that majority of HCWs had a poor attitude towards SC in WLHIV; did not have relatives living with HIV or had limited (only about 4 years) experience working with WLHIV, it was suggestive to engage them in a training programme that could impact positively on their attitude on the subject matter (SC).

4.4 DISCUSSION OF THE SURVEY FINDINGS AND CONCLUSIONS

The presented results were compiled via a survey from 94 HCWs from 21 ART units in the Volta Region of Ghana. The four latent constructs involved were knowledge, attitude, self-efficacy and interest towards SC education of WLHIV. The majority of the HCWs attending to persons living with HIV were female. Only 11% (10) of the participants were male; the rest 89% identified as females which is very typical of nursing and midwifery studies. Usually, most studies focusing on nursing and midwifery, find that majority of the HCWs are females which is normal considering the profession as a female-dominated field (Barrett-Landau and Henle, 2014:10; WHO, 2018), a phenomenon which is also reported in Ghana (Acheampong *et al.*, 2021:2).

The mean age of the participants was 34.07 years with a cumulative of about 81% of them falling between ages 20 and 39years. Thus, most of the HCWs attending to WLHIV at the various facilities were relatively young with a matching relatively low number of years of working experience. Seventy-one per cent (71%) had only 1 – 5 years of working experience and had a relative or a friend person living with HIV. The average years of working experience

with persons living with HIV was 4.13 years. This description of the participants bears many similarities to the characteristics described by Brown *et al.*, (2016:6), Goggin *et al.*, (2015:652) and Iliyasu *et al.*, (2019a:538) in their quantitative studies from Kenya, Uganda and Nigeria respectively. However, these studies had other cadres of health professionals in addition to nurses and midwives such as medical doctors and clinical officers. Nearly half of the participants in the Nigerian study were medical doctors; it also reported more males than females. Goggin and colleagues also reported a longer range of years of working experience (mean of 7.5). This might be because Uganda started HIV care quite earlier (2004) compared to the other countries (Kiragga, *et al.*, 2019:1), hence, is likely to have staff with more years of working experience in HIV care.

4.4.1 Knowledge of safe conception strategies among HCWs

The results of the study indicate that HCWs' knowledge of SC strategies was generally low. This observation is in agreement with other findings from both qualitative and quantitative studies though they (studies) enquired of awareness/familiarity rather than investigating for classification according to the level of knowledge as done in the current study. In Ghana, Laar (2013a:5; 2013b:3) found from a structured interview in three urban hospitals that only 22.9% of the 35 participants (medical officers and nurses) reported being aware of safety measures that can be used by WLHIV to conceive.

Similarly, Brown and colleagues (2016:15) also observed in a pretest of SC training in Kenya that only two-thirds of their 10 HIV care providers were aware of some SC strategies. HIV care provider's inadequate knowledge was also reported from KwaZulu-Natal in a qualitative study (Mindry *et al.*, 2016:37), where the participants were ignorant of the other strategies, and only one could describe TUI. In the same vein, Goggin *et al.*, (2015:656) reported that 86 per cent

of their participants reported being aware of SC strategies in Uganda; but nearly half (44%) of the participants self-reported their inability to educate their clients on SC because of inadequate knowledge.

Explaining further, the authors noted that TUI was the most familiar strategy among HIV care providers, followed by assisted reproduction then timed vaginal self-insemination. Iliyasu and colleagues (2019a:540) also reported from Nigeria that less than a third (31.1%) of their participants self-reported adequate or working knowledge of the SC strategies which included TUI as the most known. In accord, Finocchiaro-Kessler *et al.*, (2014:19), Matthews *et al.*, (2014a:212), Matthews *et al.*, (2014:1436-1437), also reported inadequate SC knowledge from Uganda, South African and the US respectively.

Though a majority of findings indicated low knowledge, a few also indicate otherwise. From qualitative interviews, Matthews and colleagues (2016:6) reported familiarity with a range of SC strategies especially TUI with ART which concurs with Finocchiaro-Kessler *et al.*, (2014:19) from Uganda as well as Schwartz and colleagues (2017:45) from Johannesburg.

The similarities in these findings, where inadequate knowledge was reported, maybe due to the generally low priority given to procreation among WLHIV globally on account of ethical dilemmas regarding horizontal and vertical transmission (Pasquier and Bujan, 2016:919; Chadwick *et al.*, 2011:148). However, the phenomenon is worse off in SSA, evidenced by the absence of guiding policies in most countries and as such lack of training on the programme as pointed out in the consensus statement on SC (Matthews *et al.*, 2017:4). Though the evolving advancements in the field of HIV care demand SC as part of routine care to meet reproductive rights as enshrined in international recommendation (CDC 2018:11; WHO, 2012:1; ASRM, 2015:1) local policies and guidelines are generally not keeping pace (Matthews *et al.*,

2014:210; Matthews 2017a:2) for implementation, except in very few Southern African countries where policy guidelines have been developed (Davies *et al.*, 2018:1; Gutin, 2019:45).

This inadequacy in the SC knowledge base may be responsible for the absence of comprehensive education of WLHIV on the subject matter. As echoed by several authors, clients and HIV care providers themselves, there is the need for safe conception training to remedy the situation (Davies *et al.*, 2017:37; Laar, 2013:5; Kawale *et al.*, 2015:5; Goggin *et al.*, 2015:657; Matthews *et al.*, 2017:4; Brown *et al.*, 2016:8; Iliyasu *et al.*, 2019a:540). This supports the aim of the current study. The high variability observed, as found in other studies, could be due to a wide range in working experience with clients living with HIV as well as the disparities in the intensity of training as depicted in their certificates.

The observation of an adequate SC knowledge base (Matthews *et al.*, 2016:6; Finocchiaro-Kessler *et al.*, 2014:19; Schwartz *et al.*, 2017:7) could be due to the availability of some forms of the SC programme in some research centres especially South Africa as part of implementation feasibility studies (Matthews *et al.* 2017:7). Also, the availability of approved SC policy guidelines in these endemic countries might make discussions on the subject relatively common making it possible for providers to have some knowledge on it (Bekker *et al.*, 2011:32; Brown *et al.*, 2016:4-5; Schwartz *et al.*, 2017:45). This knowledge base can be improved for better delivery of SC education to clients.

4.4.2 Provider attitude towards safe conception

Attitudes bear on provider views, beliefs and feelings towards SC which may be expressed as dissuasive or supportive predisposition, ambivalence (Jain, 2014:1-2; Nabulsi *et al.*, 2007:439). The pattern observed with SC knowledge is noticed with provider attitude on the subject. Though the mean score was relatively higher compared with that of knowledge (2.38),

it is below average. The HCWs have a poor attitude towards the other SC strategies. The range of 3.94 on a 5-point scale also indicates that their attitude though poor also varied widely. This concurs with other observations that poor attitude towards childbearing among HIV providers is evolving from opposition towards receptivity, thus, creating a kind of a continuum (Matthews *et al.*, 2016:5-6; West *et al.*, 2016:6).

This continuum of attitude is revealed in literature whereby varied views, feelings, beliefs and predispositions are expressed towards SC as a whole and then specific strategies (Wanyenze *et al.*, 2013:7; Mindry *et al.*, 2012:595; Matthews *et al.*, 2017:3; Iliyasu *et al.*, 2019a:541; Goggin *et al.*, 2014:8; Brown *et al.*, 7). Literature also indicates that the poor attitude towards procreation may present as mistreatments, stigma and discrimination from HIV care providers towards WLHIV regarding meeting their healthcare needs in that direction (Orza, 2017:31; Ingram and Hutchinson, 2000:122). The overt reactions such as coerced sterilization, family planning and abortion (UNAIDS, 2020c:13; Orza, 2017:31; MacCarthy *et al.*, 2012:123; Strode *et al.*, 2012:65) are giving way to acceptability (West *et al.*, 2016:6) but with lingering negative attitudes undertone (Goggin *et al.*, 2015:656; Iliyasu *et al.*, 2019a:541). It is known that poor knowledge is one of the pathways to HIV stigma and discrimination among health professionals. Hence, improving the HIV knowledge base is recommended as part of the measures needed to end HIV stigma and discrimination, which is also documented (Mak *et al.*, 2017:31).

The current study's observation whereby HCWs express significant knowledge of assisted reproduction and facilities where such procedures could be accessed, may explain knowledge of delayed conception (subfertility and infertility) in WLHIV (Khawcharoenporn and Beverly, 2016:180-185; Marston *et al.*, 2017:69) and a favourable predisposition to its redress (Iyer *et al.*, 2019:9). In addition to poor knowledge, the poor attitude to SC may also emanate from the

absence of guiding documents on its provision in Ghana which necessitated that HCWs know about the subject (Laar, 2013a:1). This is also documented in other studies from South Africa and Los Angeles (Cooper *et al.*, 2015:5; Mindry *et al.* 2013:597-598).

That poor knowledge and poor attitude towards SC are often observed together is documented in the literature. A pilot study in Kenya observed an improved provider attitude towards SC as a whole and also specific strategies after a training programme though both were poor before the intervention. (Brown *et al.*2016:6). Another survey found that though providers expressed much commendation towards childbearing among WLHIV, they were reticent about their lingering stigma due to perceived vertical and horizontal infections (Goggin 2015:657). Alone or in combination with inadequate knowledge, poor attitude contributes to poor output with SC education due to internal conflicts, discomfort with the subject matter, fear of taking the blame in case of seroconversion and subsequently, poor uptake among clientele (West *et al.*, 2016:7; Goggin *et al.*, 2014:998; Crankshaw *et al.*, 2014:3; Matthews *et al.*, 2014:215). Considering that training programmes have been documented to improve poor provider attitudes towards their clientele (Shaikh *et al.*, 2006:337; Fonn and Xaba, 2001:17), the need for SC training is thus emphasised and many authors concur (Goggin *et al.*, 2014:1001).

4.4.3 Interest and self-efficacy towards safe conception education

Interest and self-efficacy towards SC education were the pair with relatively good composite scores. Relative to knowledge and attitude, fewer studies have investigated self-efficacy and interest towards SC education. The findings from Uganda (Goggin *et al.*, 2015:655) and Kenya (Brown *et al.*, 2016:6) were dissimilar and under different conditions. The former reported a moderately high self-efficacy of 7.6 on a 10-point Likert scale (Goggin *et al.*, 2015:655) through a composite score. The authors also recorded moderately high composite scores for

interest but with very wide variability. The findings in the current study are similar to these. The Kenyan study reported confidence among fewer participants (20%) before the SC training with a dichotomous (yes/no) tool. After the intervention, all the participants reported self-confidence towards SC education.

Self-efficacy relates to the confidence one expresses regarding a task and predicts intention to carry out the task (Bandura, 1994:7). Similarly, interest relates to one's desire for new learning and experiences and is seen as the initial step to adopting new interventions (Crutzen and Ruiters 2015:6; Sylvia, 2008:59). Against this backdrop, the relatively high self-efficacy and interest, despite poor knowledge and attitude, is good as they suggest HCWs' inclination to educate the WLHIV on SC. Hence, it might be that the poor attitude emanates from the inadequacy felt due to the poor knowledge on the subject matter, so that effective training could contribute to remediating both as other authors have suggested (West *et al.*, 2016:9 Goggin *et al.*, 2015:652). In this context, a demand is placed on SC training for HCWs.

4.5 CHAPTER SUMMARY

The researcher set out to determine the levels of knowledge, attitude, self-efficacy and interest of ART unit HCWs' towards SC education of WLHIV as part of a needs assessment for the development of an SCTP. Total population sampling was adopted which involved 94 HCWs from 21 ART units in a self-administered questionnaires survey. Based on a hypothesised cut-off of point 2.5, both descriptive and inferential analyses were done. It was found out that HCWs had inadequate knowledge of almost all the SC strategies. This is matched with a correspondingly poor attitude towards SC education on virtually all the SC strategies. Conversely, their self-efficacy and interest levels towards SC education were moderately high – above average.

From the results, the researcher concluded that HCWs have a knowledge deficit regarding SC strategies. They also have a poor attitude towards SC education. However, their motivation (personal and normative attitude) as well as interest towards SC education is moderately high, suggesting openness and inclination towards SC education creates a demand for their training on the subject.



CHAPTER FIVE: QUALITATIVE RESULTS, DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

This chapter, the last of three under section two, will be reporting and discussing the qualitative findings from the needs-assessment for the development of the SCTP. These findings will be discussed and conclusions will be drawn. The study explored the SC needs of WLHIV who were attending the selected ART units in the study setting.

5.2 RESULTS OF THE QUALITATIVE STUDY

Thematic analysis, as described by Braun and Clarke (2006), was employed for the data analysis. The findings are reported under themes. Where necessary, verbatim quotes from the interview were used express the participants' views.

5.3 GENERAL DESCRIPTION OF WOMEN LIVING WITH HIV (DEMOGRAPHIC CHARACTERISTICS)

The findings reflect the SC needs of 24 reproductive-aged WLHIV. The women were within the age range of 23 and 42 years with a mean age of 32 (SD = 6.2 years). Apart from two participants (8%) who were Togolese, the rest of the WLHIV were Ghanaians and mostly Ewes (92%). All but three WLHIVs (13%) had at least primary level education. They were mostly self-employed in trading and artisanal crafts such as sewing and baking. Only 3 (13%) were unemployed. All participants were in some form of romantic relationship with the opposite sex. Under the two categories of marital status - married (ceremonial and traditionally accepted unions) and in a relationship (cohabiting or courting) - more than half of the women (63%) were married. Only 5 (21%) of the women knew their partner's HIV status. On average, the

lifetime pregnancies, births and surviving child(ren) is 3, 2 and 1 respectively. The basic socio-demographic characteristics in addition to HIV and reproductive history as well as partner statuses are shown in Table 5-1.

Table 5-1: Demographic characteristics of WLHIV

Characteristic	n = 24 Frequencies (%)
Age group	
20-29	10 (41.6)
30-29	10 (41.6)
40+	4 (16.7)
Marital status*	
Married	15 (62.5)
Relationship	9 (37.5)
Nationality	
Ghana	21 (87.5)
Togo	3 (12.5)
Ethnicity	
Ewe	22 (91.7)
others	2 (8.2)
Level of education	
No formal education	3 (12.5)
Primary	5 (20.8)
JSS/Middle school education	12 (20)
Secondary school (SSS)	4 (16.7)
Occupation	
Unemployed	4 (16.7)
employed	20 (83.3)
Duration since HIV diagnosis (years)	
<1	4 (16.7)
1-5	15 (62.5)
6-10	5 (20.8)
Duration of ART use (years)	



Characteristic	n = 24 Frequencies (%)
<1	6 (25.0)
1-5	14 (58.3)
6-10	4 (16.7)
Lifetime pregnancies	
None	3 (12.5)
1-5	19 (79.2)
6-10	2 (8.3)
Number of pregnancies since tested positive	
None	11 (45.8)
1-5	12 (50)
6-10	1 (4.2)
Lifetime births	
None	6 (25.0)
1-5	17 (70.8)
6-10	1 (25.0)
Children alive	
None	9 (37.5)
1-2	9 (37.5)
3-4	6 (25.0)
Partner status	
Negative	4 (16.7)
Positive	1 (25.0)
unknown	19 (79.2)



*marital status (ceremonial and traditionally accepted unions); relationship (cohabiting or courting)

5.4 SAFE CONCEPTION NEEDS OF WOMEN LIVING WITH HIV (WLHIV)

The findings reflect the SC needs of 24 WLHIV, as explored by the researcher, from selected ART units in the Volta Region of Ghana. Safe conception refers to the attempt and/or achievement of pregnancy through the implementation of evidence-based harm reduction

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strategies which minimise the HIV transmission risk inherent in serodiscordant or seroconcordant relationships where either the woman or both partners are HIV positive (Heffron *et al.*, 2015:5; Gilling-Smith, 2006:689).

Safe conception needs refer to those essentials that WLHIV think are necessary for them to attempt and/or achieve pregnancy with minimal risk of infecting/re-infecting their partners. They include knowledge, skills and such healthcare services as the WLHIV deem necessary to help them negotiate safely the HIV transmission risk inherent in achieving pregnancy in their relationships; be it serodiscordant or seroconcordant or sero-unknown. Safe conception strategies are an integral part of the SC needs of WLHIV. Exploring the SC needs of WLHIV, four main themes were identified per the summary in Table 5-2.

Table 5-2: Themes and sub-themes from the analysis

Main Theme	Sub-themes under the main themes
Confidential and HCW-initiated communication	Inability to approach HCWs on childbearing Inadequate time for personal engagement with HCWs Non-targeted conversation One -on- one confidential conversation
Need for education on safe conception strategies	WLHIV's need for safe conception education Dependence on HWCs for safe conception strategies.
Couple-based education on HIV prevention	WLHIV as subservient partners in fertility decisions Need for assistance with disclosure
System driven strategies for safe conception	Need for HWC empathy Need for the continual ARV supply for wellness Need for assistance with infertility

5.4.1 Theme 1: Confidential and HCW-initiated communication

This refers to the on-going exchange of information between HCWs and reproductive-aged WLHIV on HIV care that bears on issues of SC aimed at preventing mainly horizontal HIV infection in their partners. This discussion is to be initiated by the HCW in an atmosphere of

trust and privacy, devoid of judgemental attitude and predispositions. This theme has four sub-themes as discussed below.

5.4.1.1 Inability to approach HCWs on childbearing issues

The women acknowledged fertility desires as explicitly captured by one of them in this quote:

“Personally, I desire to have a child. When you are born into this world as a human being, the first thing is to give birth.” (Participant 008, 23 years, partner status is negative).

“When I came here, I told them I need to have a child because I do not have a child... They asked me if I have disclosed my status to my husband and I said I have not disclosed it to my husband ... But I really want to have a child.” (Participant 011, 23 years, partner status unknown).

Almost all the participants indicated that they had been educated to always use condoms. However, some of them indicated that they were also advised to approach the HCWs with their spouses (where possible) for a discussion when they desire to have a child. Some of the WLHIV agreed that being new to the HIV disease, they felt it was important to approach the HCWs when planning to have a child to make an informed decision that prevents HIV transmission. On the contrary, less than a fourth of the participants were able to visit the HCWs for a discussion on childbearing. Some of the women narrated that they planned to discuss the issue with the HCWs but were not able to voice their concerns when they visited the ART unit as indicated in this quote:

“Hmmm. That is the problem. So, if I get home, I think about it ... do they want us to have a child before they say we should use condom? What will happen? I think a lot, but I do not understand. I ask myself. I say one day I will come and ask that if I want to have a child, still

should I be using condom or I shouldn't" (**Participant 020, 30 years, partner status unknown**).

Except for two women, the WLHIV who mustered up the courage to approach their HCWs were those who had attempted conception for a while without success. In the absence of information on SC and inability to approach HCWs on the issue the women worked up their plans which are usually contrary to HIV prevention strategies and engagement in HIV care as indicated in the excerpts that follow. A significant number agreed to stop the use of condoms when they desire to have biological children without any discussion with the HCWs. Two of the women admitted to defaulting follow-up reviews for a refill and resurfaced when they had achieved pregnancy or delivered.

Me, what I know is my husband and I are together but they (attending nurses) said we should use condom whenever we want to have sexual intercourse, so that is what we do. But last time, I said I would like to give birth. So, I said I would not use it so that after it (giving birth) then we can continue (sexual intercourse with condom). ...giving birth is a priority for me right now (**Participant 010, 41 years, Partner is HIV positive**).

I haven't reported at the hospital again since I became pregnant until I delivered. So, when the baby was tested and it proved negative, I was asking myself why it was so. I asked myself why I was being wicked towards the baby for it to die. I was wondering why the child did not contract the disease (**Participant 009, 35 years, partner status unknown**).

This hesitancy and inability to approach HCWs on the subject expressed by the WLHIV even among those who verbalised they did not encounter dissuasive situations such as time constraints favoured HCW-initiated SC education thus, making the HCWs approachable as one of the WLHIV expressly captures it here:

The information..., like how you are asking me the question now, you can give me the information or you can help me to do something, example; you can do like this or make it like this... (do this and that to have SC) (Participant 020, 30 years, partner status unknown).

5.4.1.2 Inadequate time for personal engagement with HCWs

Another issue on the way to having a conversation on SC, as verbalised by the WLHIV, was inadequate time for engagement with HCWs on personal issues which were not raised. Some of the WLHIV said though they had a chance to talk to the HCWs while they took their turns to have ARV refills, that period was woefully inadequate. They opined that despite the time constraints of HCW, due largely to the huge numbers of clients that needed to be attended to at each visit, HCW would need to engage with them. The WLHIV needed time to discuss such matters as childbearing. In the absence of this, some younger WLHIV narrated they befriended and confided in the elderly WLHIV fellows for advice.

Mostly when we come, there are a lot of people, there isn't much time. I have to the time when there are fewer or no clients to get closer to her (the attending HCW) (Participant 10, 41 years, partner status is positive).

5.4.1.3 Non-targeted conversation

The women also narrated that their visits to the ART units are full of straightjacket service routines. So, even when they had their turns for consultation, such routines ran through. During the period of the consultation, they were rushed through a series of questions on general issues which were used to fill the required record books on their attendance. These routines, aside from putting both parties under pressure, also deprive the WLHIV of the focus needed to raise

their personal or peculiar issues such as procreation for remediation. This is contained in this excerpt:

“Anytime I come here, lots of people. So, they (attending HCWs) are under pressure there. So, if they ring the bell some people will enter. We do not sit like how we are sitting here now, so I cannot ask this question. Only the question that is in the book (health record booklet) and they ask me – am I having sex, am I having some pain? Aha. Only that question I answer, but the question in my mind (on procreation), I did not ask them.” **(Participant 020, 30 years, partner status unknown).**

5.4.1.4 One-on-one confidential conversation

The WLHIV also indicated that most of the health education sessions were held for all the attendees (all age groups of both sexes) at once. While the women admitted that they learnt much during these mass education sessions through interaction with fellow clients as questions were asked for clarifications, many were quick to point out that such a method was not conducive to facilitate discussions on sensitive issues like childbearing in HIV. Aside from the lack of privacy, other reasons cited for not initiating conversations on childbearing include shyness, inability to speak in public and fear for the HCWs as exemplified in the quotation below:

“I could not ask. ... Some of us feel shy and so cannot speak in public. As you and I are here conversing now, I am talking. But I cannot raise my hand and say anything in public. ... problems of this nature, I cannot ask. When I come here having issues in my mind, I do not ask. If someone else happens to raise his/her hand and says it, I understand, that is it ... I cannot ask ooh!” **(Participant 007, 31 years, partner status unknown).**

While the women's expressions show some of the reasons, they did not ask attending HCWs for advice on procreation as well as emphasise the need for a one-on-one confidential conversation about procreation and SC, a few of the participants brought to the fore another dimension of the problem - their inability to initiate a conversation on reproduction with HCWs even if they are accorded privacy.

5.4.2 Theme 2: Need for education on safe conception strategies

As defined earlier, SC aims at attempting/achieving pregnancy with minimal risk of infection/re-infection to the partners involved. This is achieved through the use of selected evidence-based harm reduction strategies which are organised into a package. The package – a type of combination HIV prevention programme – has components from the behavioural, biomedical and structural HIV prevention interventions which are tailored to allow heterosexual HIV-affected partners (in serodiscordant or seroconcordant or sero-unknown) to have biological children. As indicated earlier under literature review, the components of the package, termed SC strategies, include ART for viral suppression, timed unprotected sexual intercourse, timed vaginal self-insemination, PrEP, treatment of STIs, voluntary male medical circumcision and artificial reproduction as the core elements.

Need for education on SC strategies, as a theme, refers to the necessity of educating WLHIV on these strategies for them to make informed choices that are protective of their partners against HIV infection. The two sub-themes that explained this motif are WLHIV's need for SC education and their dependence on HCWs for SC strategies.

5.4.2.1 WLHIV's need for safe conception education

Most of the WLHIV narrated that they knew they endanger infecting their partners and live in fear anytime they had sex without using a condom, but they must give birth too. This, they said, creates a painful dilemma for them, highlighting their need for education on SC strategies. Almost all the women admit a state of helplessness and mental stress in this situation.

“Yes, there is fear in me (that I might infect my partner) ... I do not know yet (what to do) ... They (HCWs) should help me so that if I and the man we have sexual intercourse and pregnancy ensues, the child should not be infected and the man should also not contract the disease”
(Participant 011, 21 years, partner status unknown).

To assuage their fears and dread of infecting their partners, WLHIV resort to prayer as a coping mechanism. This further highlights the need for SC education. Some also offered prayers because they believe that whether or not one contracts HIV “is an issue of luck” an indication of serodiscordance misconception. The women indicated that aside from everything, they also believed prayer can protect their partners against HIV infection.

“I do not know how to handle it. If I should give birth, then we would have to have sexual intercourse without the use of condoms. That is it. We don't have to use [a] condom; we have to do it without them. But I have been pondering over it. ... My conscience is worrying me about it. So, what I do, (is) I pray that he does not get it.” **(Participant 013, 32 years, partner status unknown).**

Despite their dread of infecting their partners during the period of attempting pregnancy, the women express their willingness to brave the risk to fulfil their procreation aspirations which they held high as per these expressions:

“Me, what I know is that my husband and I are in together but they (attending nurses) said we should use [a] condom whenever we want to have sexual intercourse, so that is what we do. But the last time, I said (to myself) I would like to give birth. So, I said (to myself) I would not use it so that after it (pregnancy) then we can continue (sexual intercourse using [a] condom) ...giving birth is a priority for me right now ... I will leave out the condom. When I become pregnant, then I will continue with it (condom use) (Participant 010, 41 years, partner status is positive).

Though some WLHIV have outlined how they attempted pregnancy that bears on TUI, the precautions needed for its application as a safe conception strategy, were always missing in their account. Though they were told not to make it a habit to have unprotected sex and to resume condom use immediately they become pregnant, none of the women was able to correctly describe how to determine the ovulation period which is key in the uptake of TUI let alone state that unprotected sex was only allowed at the peak of fertility – the mainstay of this SC strategy.

They said if you leave out the condom, the moment you become pregnant and you know you are pregnant, you must continue using the condom. (Participant 003, 23 years, partner status is positive)

Some of the WLHIV with subtle openness asked for advice that can help them conclude as to whether they should bear a child or not. In the process, they request advice to do it safely if it is advisable for them to have biological children.

So, I have to born (give birth), it will be better But from my mind, I do not want to do it (spread the disease). But if you have any advice, you can give it to me; should I do it (have sex

which is likely to infect the man) to have a child or I shouldn't. That is the only problem that I have. (Participant 020, 23 years, partner status is negative)

All the women indicated that they were ready to incorporate new teachings on SC to protect their partners and children from being infected with HIV.

"I am ready to comply with any advice that will help prevent my husband from getting infected with the disease. I do not know what to do; you have to advise me." (Participant 002, 23 years, partner status is negative).

5.4.2.2 Dependence on HCWs for safe conception strategies.

Though almost all the women acknowledged the vulnerability of their partners, as to the strategies needed for them to achieve conception without infecting/re-infecting their partners, most of the women could not tell specifically. They want information or skill that can help them negotiate the HIV transmission risk to their partners though they do not know specifically what it would entail. They indicated that it is the HCWs who are trained and as such knowledge about the disease; they (WLHIV) are laypeople. The HCWs therefore, are in a better position to know what help they need in this regard and hence should provide them with such. The following excerpt portray their expressions when they were asked to outline what they think was necessary to manoeuvre the HIV transmission risk for SC.

"This one, I do not know it ... you will tell me. ...If there is something, they (attending nurses/midwives) can do about it, they have to tell me to know. If they say there is nothing they can do, then it means there is nothing I can do" (Participant 017, 27 years, partner status unknown).

5.4.3 Theme 3: Couple-based education on HIV prevention

This refers to the situation where partners receive SC education together as a unit. Fertility decision-making and implementation in heterosexual relationships usually involve both partners; a unity of purpose is even more binding in SC. This is because both parties need to know and understand the dynamics of their serostatuses in relationships (whether serodiscordant or seroconcordant) and how it plays on HIV prevention to implement SC strategies successfully. This theme encompasses three sub-themes viz: WLHIV as subservient partners in fertility decision-making, benefits of engaging both partners and assistance with disclosure.

5.4.3.1 WLHIV as subservient partners in fertility decisions

Some of the WLHIV related that their male partners, usually, had the final say in fertility decision-making as per this excerpt:

So, he (partner) keeps saying that even if it is only one child, he would be glad that we have it. For me, I do not want to give birth again; but it is he (partner) who needs a child. That is why we are still pressing on that even if it is one, I bear it for him.” (Participant 012, 25 years, partner status is unknown).

To maintain this order, the women indicated that they (their partners) must be involved in the education they would be receiving as they cannot implement the teaching without the approval of their partners. The mode of involving their partners, as expressed, differed. Some said they intended to visit the facilities with their partners for the HCWs to help orientate them through testing and then, depending on the outcomes, educate them as appropriate regarding childbearing. This category of WLHIV self-reported disclosure to their partners. One woman

narrated visiting the facility with her former partner when they desired a child and were taken through education on the subject which she could not describe because she had forgotten what was taught. Others expressed difficulty presenting with their partners and would depend on the ingenuity of the HCWs to achieve that. Thus, some of the women consider themselves half of the ‘couple unit’ with a partial say on issues of procreation and as such need to involve their partners for completeness and finality on the matter. However, a few also indicated that they could relate the SC information successfully to their partners without any difficulty.

“The man who is responsible for my fourth pregnancy has no child. When we planned to have that child, we were taught how to use the condom. But I have forgotten what they told us. So, if I cannot educate the guy who wants to marry me, I will ask him to come for a test. When he is tested, he will be counselled on how to use the condom. This will help me to have more education about how the condom should be used before I can get pregnant.” (Participant 004, 35 years, partner status unknown).

“If the boy (partner) is ready to marry me, I will tell him everything about me that we should come to the hospital together so that the doctor (attending HCWs) would talk to us, so that we can follow the instruction so that we can have children.” (Participant 020, 30 years, partner status unknown).

5.4.3.2 Need for assistance with disclosure

Some of the women reported that though they would like to disclose their HIV status to their partners, they could not do so. In a state of non-disclosure, the women related that they coaxed their partners into using condoms under the pretext of preventing pregnancy or spacing their children. Thus, when it is agreed that they need a child, condom use cannot be sustained emphasising the necessity of disclosure and SC education for peri-conception HIV prevention.

“You see, anything can happen. Currently, the man I am dating was my year mate at secondary school. He is planning for marriage. He works with Ghana Prison Service. He doesn’t have children but he wants to marry me (who has children). So, when things work well and he desires to have children, I can no longer tell him to use [a] condom.” (Participant 004, 35 years, partner status unknown)

Two of the women recounted that their attempt at disclosure failed and resulted in an accusation of promiscuity. Some of the women requested assistance to do so. The anticipated consequences mentioned, which were considered barriers to disclosure, included fear of divorce, rejection, malicious gossip as well as fear of the unknown. Those who felt they are obliged to let their partners know of their HIV claimed that presenting together at the facility, could afford the HCWs to use their resourcefulness to help them to disclose.

“Hmmm, what I should do, so that the man would be aware of my medication (ARV) and whether he would accept or not. And how I would make him aware (that I have HIV). ... he may flare up because this disease is not a good one. He could take it to mean I am promiscuous, meanwhile I had my sexual debut very late. ... I just want you to find a strategy to tell him so that he should know the type of disease I am suffering from which warrants the type of medicine I take. Because whenever he enquires of me as to what disease at all has been found in me that I am on the medication I only answer him that I do not know; and that I was only given the medication. He need not be told. At my age, I am a grownup; not a kid to be worried if he should say we should break up the relationship.” (Participant 022, 42 years, partner status unknown).

Others also think that having a joint education with their spouses, would mean that they (male partners) are directly involved in the education and as such would have a first-hand

understanding of what is expected of them and hence a better chance of making informed choices and implementation of SC strategies.

5.4.4 Theme 4: System driven strategies for safe conception

This theme relates to factors in the domain of the health facilities that are identified by the WLHIV as necessary for them to be able to achieve SC. It concerned logistics, service delivery and attitude of HCWs which can be harnessed for effective SC education delivery. Three sub-themes were identified.

5.4.4.1 Need for HCW empathy

Some of the WLHIV recounted that when they enquire about some reproductive health issues from HCWs, they were laughed at, bombarded with questions or scolded. This intimidated them and prevented them from bearing themselves or confiding in the HCWs. Considering there is difficulty approaching HCWs on reproductive issues, HCW empathy is needed to prevent judgmental attitudes which could worsen the situation.

“I am not having menstruation. So, the nurse that is attending to me shouted “ah! What is it?” She said that I should go and do the test (pregnancy test). So, I went [to do] the test, [the] result was negative. Then another one (nurse) sitting there was laughing at me saying ‘if you are not having menstruation, is it not your pleasure?’ Then the other one (another nurse) said I should not mind her; she is just joking. (Participant 020, 30 years, partner status unknown).

5.4.4.2 Need for continual ARV supply for wellness

Some of the WLHIV believed that they need continual supply and adherence to ARVs to protect their partners against infection even in the context of unprotected sex to have children. Many of them also recounted that the ARVs helped them in regaining their health to be able to carry a pregnancy. Hence a few who were refused refills as a punitive measure for skipping their review dates were worried and voiced their displeasure.

“So, when I travelled home (hometown) and I was no more using the medication, I was sad. I was not given the medication, as a way of punishment (defaulter). So today, I came to plead with them to give me the medication but they said I should come for it later. I know that by the grace of God, I will surely get the medication.” **(Participant 002, 23 years, partner is negative).**

While ARV adherence is important for HIV prevention, two of the women indicated that they believed ARV adherence alone is protective of their partners and thus, they cannot be infected without the use of condoms. This is an assertion that insinuates U = U and may not hold completely. Due to logistic deficits in HIV care, there is difficulty monitoring viral loads and constant ARV supply which are pivotal to the U=U strategy. This is even worsened with the alleged refusal of HCWs to give clients a refill as a punitive measure for defaulting. In the phase of these challenges, implementation and uptake of U=U as an HIV preventive strategy is not feasible further deepening the demand for augmentation with SC strategies in the context of procreation.

“I believe if I adhere to the medication well, the man cannot contract the disease from me. But if I do not use it (the medication) well, he can contract the disease from me.” **(Participant 007, 31 years, partner status negative).**

“It means that if I do not want him to contract the disease, I have to take the medication (ARVs) because it weakens the virus and prevents the man from contracting the disease. If you do not take the medication, the virus becomes active and by all means, the virus will run and enter the man. So, taking the medication renders the virus too weak to enter the man”. **(Participant 009, 35 years, partner status unknown).**

5.4.4.3 Need for assistance with infertility

Some of the women indicated that they were experiencing delays with conceiving. They explained that this made them desperate as well as determined to continue trying for pregnancy through protracted unprotected sex. Some also related that in such circumstances, it makes them reluctant to negotiate condom use. They also try other means of getting pregnant such as using herbal treatments, especially those who feel they have advanced in age but do not have children.

“The two previous children I gave birth to were unplanned; the pregnancies took me unaware. Then I did not visit the hospital. But now, it is becoming difficult to get pregnant.” But I am of the view that our inability to have a child stems from my ‘husband’ (she said they are not yet married—they are cohabiting) himself; he is quite old but has never had a child.” **(Participant 012, 25 years, partner status is unknown).**

“My question is, after giving birth to my second child, I could not take seed/get pregnant again. I know that with what is happening to me, I have to take some herbal treatment. But I have heard from here (the clinic) that if you are on this medication (ARVs), you cannot take any other medication. This is the enquiry I want to make for help”. **(Participant 008, 39 years, partner status unknown).**

5.5 SUMMARY OF FINDINGS

The SC needs of WLHIV emerged as the HCW-initiated communication on childbearing. They also need education on SC. The women also expressed their need for couple-based HIV prevention education in the context of procreation which could help them with disclosure and improved understanding of SC. The need for HCW empathy, continual ARV supply for wellness and assistance with infertility also came to the fore.

5.6 DISCUSSION OF FINDINGS

As part of the needs assessment to determine the components of the SCTP, the researcher conducted both quantitative and qualitative studies among HCWs and WLHIV respectively. This was to gather the provider-consumer perspectives of SC against the backdrop of literature on the subject in determining the components of the SCTP. In the previous chapter, the findings of the quantitative study were discussed which confirmed the need for training for HCWs on SC strategies.

Semi-structured interviews that explored the SC needs from 24 WLHIV from 12 ART units were analyzed using Braun and Clarke's six steps of thematic analysis. According to the perspectives of the WLHIV, anything that they think might be of help to them to attempt/achieve pregnancy without infecting their partners, is termed a SC need. As explained earlier, SC needs may include knowledge, skills, pieces of advice and some healthcare services among others. In this segment, the researcher discussed the findings gathered when the SC needs of WLHIV were explored at selected ART units within the Volta Region in connection with the literature.

5.6.1 Description of the WLHIV whose safe conception needs were explored

The women were mainly Ewes of Ghanaian descent. Their age ranged from 21 to 42 years with an average of 32 ± 6.16 years. Though they were all in passionate relationships, only 63 per cent self-reported actual marriage. Only 21 per cent of the women knew their partner's HIV status compared to 41 per cent found in South Africa (Matthews *et al.*, 2014:3). The difference may be due to the differences in sampling and sample size. Their lifetime pregnancies, births and surviving child(ren) are 3, 2 and 1 respectively on average which is suggestive of a considerable losses of pregnancy and children born. Only 12.5 per cent of them never had any formal education. They were mostly self-employed.

The four main themes that were induced from the data with their sub-headings were: confidential and HCW-initiated communication (*inability to approach HCWs on childbearing, inadequate time for personal engagement with HCWs, non-targeted conversation, one-on-one confidential conversation*); need for education on SC strategies (*WLHIV'S need for safe conception education, dependence on HCWs for safe conception strategies*); couple-based education on HIV prevention (*WLHIV as subservient partners in fertility decisions, need for assistance with disclosure*) and system-driven strategies for safe conception (*need for HCW empathy, need for the continual ARV supply for wellness, need for assistance with infertility*) as outlined in Table 5-2. in chapter five. Each has at least two sub-themes (Table 5-2). The discussion unfolds under each of these themes as a heading.

5.6.1.1 Confidential and HCW-initiated communication

In this study, the WLHIV expressed the absence of confidential and HCW-initiated communication implying the unavailability of continual exchange of information that centres on how to conceive safely. This challenge manifested as an inability to approach HCWs on the

issue of childbearing, inadequate time for personal engagement with HCWs, non-targeted conversation and absence of one-on-one confidential conversation. Thus, WLHIV expressed a need for continual provider-initiated communication on childbearing that is initiated by the HCW.

Literature extensively documents that though provider-initiated communication on SC education is an important approach for the uptake of SC strategies, it is generally lacking (Bekker *et al.*, 2011:32; West *et al.*, 2016:5; Davies *et al.*, 2018:26; Goggin *et al.*, 2015; Kawale *et al.*, 2015; Matthews *et al.*, 2014; Matthews *et al.*, 2015:10). The authors agreed that there is the need for provider-client conversation that allows for an understanding of the fertility desires/intentions, risk perception and SC strategies between the two parties. Such conversation also affords the provider the platform to identify opportunities to sell out SC to those who might not be considering childbearing in the interim (Matthews *et al.*, 2014:214).

There is a consensus in the literature that providers must be the first to talk about these things because such move would dissipate the anticipated stigma and perceived unapproachability of providers, convey support and facilitate the establishment of rapport for further conversation (West, 2016:4-5; Bekker *et al.*, 2011:32; Davies *et al.*, 2018:26). However, it is often observed that this is not usually the case though countless chances present opportune moments for such interactions while HCWs consult with their clients resulting in lost opportunities for SC education. (Matthews *et al.*, 2014:4; Finocchiaro-Kessler *et al.*, 2010:319; West *et al.*, 2016:4; Goggin *et al.*, 2014:998; Kawale *et al.*, 2014:5).

These observations are corroborated in this study. One of the ways by which HCWs missed opportunities to conduct SC education was through postponement. When some WLHIV enquired about the possibility of having children, the answer was in the affirmative. But

contrary to the expectation of seizing the opportunity to initiate education on SC, the providers tell the WLHIV to return to the unit at a later date when they were ready to have children. West and colleagues (2016:4) observed this attitude where providers had the impression that educating WLHIV on the SC when they were not ready (virally suppressed, financially ready) might contribute to “premature attempted conception” which could contribute to both vertical and horizontal infection. With this mindset, they try to control the women by keeping the information. Considering that pregnancies are not usually explicitly planned but not unwanted (Matthews *et al.*, 2013:467; Matthews *et al.*, 2017a:4; Davies *et al.*, 2017:40) those deferred opportunities might be lost as some of the women return to the facility pregnant as the authors reported that the women then conceive without the information (Wanyenze, 2013:7; Crankshaw *et al.*, 2014:4).

It was also found in this study that those women who presented subtleties such as worry about irregular menses, advancing years without children among others were trivially handled and discharged through several referrals from one provider to another. These usually result in deferrals when the women could not keep going round the vertically managed services (as everywhere they go for service, they needed to reveal their HIV positive status which they found burdensome). These experiences were recounted in South Africa (Matthews *et al.*, 2014:215). To address this shortfall, providers need the training to sharpen their ability to recognise opportune moments as described or even create such moments for SC education (Matthews *et al.*, 2014:215; West *et al.*, 2016:8).

This study also found that the heavy clinic attendance and the flow of activities are protocol-driven, highly routinised and straight-jacketed. This leaves little room for the WLHIV to express their personal needs. Starting with mass health education, the women indicated they were not able to discuss such sensitive topics as their fertility intentions, even if they wished

to. During their one-on-one consultations too, the women approach their providers bearing in mind the heavy attendance and the little time allotted to each one of them. By the time they complete routine questioning and procedures, there was no time for the provider to listen to the women's personal needs for redress as the allotted time was used up. As the routine questioning was not targeted to their childbearing, it made no room for such dialogue. This phenomenon in clinic flow was also described by Matthews *et al.*, (2014:215). The authors observed that protocol driven-care with ready-made messages restrict the HIV-care provider's ability to render tailored messages. The situation is worsened by the time constraints as well as the large attendances at the clinic. Thus, the providers cannot attend to the client's private issues outside the protocol routines within such stretched time limits, the authors stated.

One would also expect that once the WLHIV are in consultation with the provider, they would put the SC needs to the providers since the awaited provider-initiated discussions were not forthcoming. From the current study, very few of the WLHIV did approach the providers. Even so, they approached the HCWs on account of delay in achieving conception but not rather than SC. The literature discussed some reasons why WLHIV may not approach providers with childbearing discussions., Chief among these reasons is anticipated and enacted stigma from HCWs in the form of derogatory remarks and discrimination, regarding their fertility intentions (Orza *et al.*, 2015:4; Orza *et al.*, 2017:31; Kawale *et al.*, 2015:4).

Findings from the current study revealed that some of the women were ridiculed when they approached providers about ceased menstruation and other such complaints creating the impression that the women were finding excuses for pregnancy. Because of such incidents, the women involved expressed reluctance to approach providers on such matters. However, they looked forward to provider-initiated conversations on the issue. These observations were noted

from other qualitative studies from South Africa, Uganda and Kenya (Mmeje *et al.*, 2016:13; Beyeza-Kashesya *et al.*, 2018:8; Matthews *et al.*, 2013:466; Kawale *et al.*, 2014:5).

Another reason for the inability of WLHIV to approach providers with fertility issues is imbalanced power dynamics, whereby the providers (especially so with nurses and doctors) are seen to be superior. In the same vein, the providers are also seen as the repository of all knowledge that they (clients) need to know about their conditions, a situation which seems to further lay emphasis the power imbalance (Henderson, 2003:505; Strode *et al.*, 2012:64; Marie Modeste and Majeke (2014:4). In this context of power imbalances, the women appear intimidated, fearful and reluctant to ask questions though they might have issues on their mind (Henderson, 2003:505; Strode *et al.*, 2012:64). Considering that the providers are the main source of information for their clientele, their control and silence of information on childbearing make WLHIV appear to be left with the choices of asking friends or other approachable sources or simply acting on what they know. Other similar contributory factors to the poor provider-client communication include mass education and inadequate structures for privacy (Brown *et al.*, 2016:9) and non-targeted communication (Wanyenze *et al.*, 2013:6).

Thus, even alone consulting with the provider, the WLHIV are unable to put her issues on childbearing across. This is because of fear from the power imbalance (Strode *et al.*, 2012:64), the impression that continual emphasis on condom usage meant disagreement with childbearing, expectations of judgement (Matthews *et al.*, 2015:6) and humiliation from derogatory remarks and discrimination (Orza *et al.*, 2015:4; Orza *et al.*, 2017:31; Kawale *et al.*, 2015:4). The women, therefore, leave the consulting area without expressing their fertility intentions for guidance. In the absence of an avenue to enquire about childbearing, some of the women indicated they consult their fellow clients who had had children for guidance. Kawale and colleagues (2014:5) found that only 1% of their participants were willing to approach a

provider for advice on having a child. The rest prefer contacting their network of friends or family members. A review of the current status of SC services in SSA suggests that poor knowledge of and, indifference to clients' reproductive needs might be contributing factors (Davey *et al.*, 2018:5). Thus, training on these facets of reproductive needs of WLHIV might remediate these observations.

5.6.1.2 Need for education on safe conception strategies

This theme refers to the necessity of enlightening WLHIV on SC practices for them to make informed reproductive decisions that minimises the risk of peri-conception HIV infection. Similar to the observations from South Africa (West *et al.*, 2016:4; Matthews *et al.*, 2015:7) and Kenya (Ngure *et al.*, 2016:1587) this study found that almost all the WLHIV lived in fear of infecting their partners whenever they had sexual intercourse with their partners without using condoms, usually in the context of getting pregnant. In as much as the women want to protect their partners from HIV infection, they also want to have children. To overcome the dilemma, they rely on prayers, avoiding bruises on their genitals, and using condoms perforated at the tip among others. A few of the women also expressed the belief that to contract HIV or not was a matter of luck, similar to what was reported by Ngure *et al.*, (2016:1587) and Matthews *et al.*, (2013:465). The women were also found willing to learn new HIV prevention strategies that can help them prevent peri-conception infection. Further, this study also revealed that WLHIV's source of information on SC is health professionals, especially nurse and midwives. This notwithstanding, the women did not know what exactly to expect as assistance to aid their effort for SC. However, they trust that their attending providers, being professionals, would know.

These findings were also documented from South Africa, where people living with HIV lamented that they knew they had to protect their uninfected partners but remained helpless because they did not know how to manoeuvre the peri-conception HIV risk to have children (Matthews *et al.*, 2013:465; Matthews *et al.*, 2015:9). They believed the providers were a credible source of information and should have the solution but did not approach them. (Matthews *et al.*, 2013:465; Matthews *et al.*, 2015:9). These similarities in findings could be due to the observation that SC education is an emerging field in SSA, very few countries have guidelines, training and education protocols and services in place. Thus, knowledge is low among both providers and the WLHIV on the subject matter (Matthews *et al.*, 2017a:5).

These findings provide good grounds for SC education as they communicate demand for it. However, the inadequate knowledge and attitude on SC continue to be a stumbling block (Matthews *et al.*, 2017a:5). There is consensus in the literature that providers remain pivotal to implementation success of SC education and need to be equipped with adequate training (Crankshaw *et al.*, 2012:8; Matthews *et al.*, 2015:9; Matthews *et al.*, 2017a:5). Marie Modeste and Majeke (2014:4) observed that WLHIV obtain information on care from four sources, self, the provider, personal network and community, but they are likely to approach providers with biomedical health issues. This is similar to Blackstock *et al.*, (2010:138) who found that women would depend on providers of family planning for adequate guide towards making an informed choice even though they obtain information from other sources. In this study, the dependence of WLHIV on providers for SC makes it even more imperative that they (providers) have the necessary knowledge, attitude and skill making them adept at SC education.

It also means that providers must be proactive in initiating this conversation, engaging WLHIV (with or without fertility desires) about SC education, exploring their fertility goals, their previous knowledge, practices and experiences to provided tailored SC education to the

WLHIV. The finding from this study whereby WLHIV with childbearing intentions contact their fellow women living with HIV rather than providers for advice on the matter was also reported by Kawale *et al.*, (2014:4). This suggests that if HIV-care providers do not educate WLHIV on SC, they are likely to resort to other sources for information (Marie Modeste and Majeke 2014:4). The women could end up with incorrect ideas which may not be supportive peri-conception HIV prevention.

Thus, provider training has advantages for peri-conception HIV prevention by ensuring that providers are prepared for the task and also confident. It also ensures that they are imparting the right and authentic information for informed safe reproductive decision-making to WLHIV who are expectant but reticent and receptive. Provider training, therefore, contributes to eliminating the ‘gambling work’ as some ill-informed providers term SC (Matthews *et al.*, 2014:5).

5.6.1.3 Couple-based education on HIV prevention

The findings from the current study also revealed that WLHIVs need couple-based education on peri-conception HIV prevention. The agenda to engage men in reproductive health generally and in HIV response has received much attention recently (UNAIDS, 2016:3). The male factor in SC education is well documented in literature as either facilitative of uptake or impeding its usage (West *et al.*, 2016:5; Finocchiaro-Kessler *et al.*, 2014:14; Goggin *et al.*, 2014:10; Crankshaw *et al.*, 2014:4). In Africa, men play very important roles in fertility decision-making including the uptake of SC strategies (Kaida *et al.*, 2016).

A unilateral fertility decision by a woman may not stand. This is because, in patriarchal societies, the final decision-making may rest with the men (Kawale *et al.*, 2014:4). Thus, it may not be far-fetched that the partners of WLHIV may have to decide the what and when of

the uptake of SC strategies. This is seen in studies where WLHIV got pregnant and had children not because they wanted to, but to meet the demands of their partners (Cooper *et al.*, 2009:278; Kawale *et al.*, 2014:4). Further, a couple may have divergent views on the various SC strategies. Some men consider SC methods that deviate from the traditional way of conceiving (assisted reproduction and timed vaginal self-insemination) as unnatural and unacceptable while WLHIV thought it was right by preventing HIV risk (Schwartz *et al.*, 2016:6). In these situations, a WLHIV's choice of SC strategy may not hold.

Crankshw *et al.*, (2012:2) acknowledged the position and role of men in HIV and reproduction. In their conceptual framework for understanding HIV risk behaviour in the context of fertility among serodiscordant couples, the authors draw attention to couple-based factors that must include effective communication (Crankshaw *et al.*, 2012:2). This is also because the manner of some of the SC strategies demands mutual understanding and co-operation between partners, advanced planning, preparation and hence status disclosure for effective implementation (Saleem *et al.*, 2016:199). Brown *et al.* (2016:17) observed that WLHIV and other participants commended SC training and education programmes. They believed it made room for and fosters couple communication in that after the education, issues could further be discussed between partners and thus, improving fertility decision-making.

Thus, both men and women approach fertility and fertility decision-making differently. Usually, due to sociocultural factors, women may negotiate while men may resort to patriarchal powers (Ngure *et al.*, 2015:5). As such, couple-based SC education is likely to facilitate mutual understanding and opportunity for further discussion for informed fertility decision-making. However, it is worth noting that the couple-based education was desired by those WLHIV who had disclosed or were willing to do so. The study also found that those WLHIV who had not disclosed their status disagreed with this arrangement; they desired SC education but without

their partner knowing their status which providers acknowledged was challenging (Mindry *et al.*, 2013:596). However, implementation studies from South Africa indicate difficulty in engaging men to this effect (Schwartz *et al.*, 2014:283; Schwartz *et al.*, 2017:45; Davies *et al.*, 2017:40) but Khadir and colleagues (2018:1732) found otherwise. They reported that men seek for, and engage with SC education (Khadir *et al.*, 2018: 1732). There is therefore a need for further studies on involving men in SC.

The current study also revealed that WLHIVs anticipate some other benefits from couple-based SC education such as using the platform for HIV status disclosure and eliciting cooperation for condom usage from their partners. As stated earlier, the importance of disclosure in SC uptake and successful implementation is well established (Crankshaw *et al.*, 2012:7; Crankshaw *et al.*, 2014:3; Davies *et al.*, 2017:39-40). However, it was observed in this study that the majority of the WLHIV could not disclose their status due to fear of divorce, being peddled as promiscuous, isolation, financial retribution among others. A few also wanted to be relieved of the stress of secrecy with nondisclosure (Orza *et al.*, 2015:4; Rujumba, *et al.*, 2012:5; Maeri *et al.*, 2016: 62; Atuyambe *et al.*, 2014:5-6).

Those who wish to disclose but could not, desire provider assistance to do so when they report with their partners at the facility. Schwartz and colleagues (2017:49) have reported this phenomenon from an implementation study in South Africa. This requires that providers are equipped with tact and knowledge through training, to effectively mediate the disclosure process (Crankshaw *et al.*, 2014:4; Davies *et al.*, 2017:39-40). They must know which disclosure approach (personal, mutual or partner notification) is most suitable to a couple (Bishop *et al.*, 2010:8; Maeri *et al.*, 2016:63; WHO, 2012:38). Schwartz and colleagues (2017:49) also indicated that their designated and dedicated SC education staff had received appropriate training on disclosure, including role-playing and practising on clients, and was

able to handle the situation effectively with assistance from other experts where necessary. Thus, effective training cannot be overemphasised in the delivery of SC education.

5.6.1.4 System driven strategies for safe conception

The study also found that WLHIV had the need for a continual supply of ARVs for wellness, empathy and assistance with infertility. Other authors also established that women living with HIV need ARV supply and adherence (Davies *et al.*, 2018:7-8; Matthews *et al.*, 202:2; Schwartz *et al.*, 2014:2). The current findings also revealed that some of the women were convinced that the medication contributes to their wellness, maternal health and also minimises the risk of peri-conception infection of their partners. Even so, a few of the women believed absolute prevention with the ARVs as communicated in the U=U message. This finding was reported from other studies and are relevant to SC uptake. Wanyenze and colleagues (2013:6) reported that Ugandan WLHIV shunned childbearing when they were unwell from the HIV infection process. However, when their health improved from engagement in treatment, they desire and bore children.

It is important for the women to be educated on the critical elements of practising U=U and how different it is from using ARVs as adjuncts in SC. This will prevent misconceptions from forming the basis of their fertility decision-making. One of such critical elements is viral load monitoring (Davies *et al.*, 2018:7) which is a challenge to HIV care in most settings in SSA (Levison *et al.*, 2012:6; GAC, 2015b:139). In the absence of viral monitoring, ARV alone cannot be used as a SC strategy but in combination with other strategies despite unwavering emphasis for adherence (Davies *et al.*, 2018:7). This also requires that the providers themselves have updated knowledge on these issues (in the context of serostatus dynamics of partners and

principles of preventing seroconversion) which must be spelt out in the authentic protocol guidelines for SC implementation (Bishop and Foreit, 2010:8; Davies *et al.*, 2018:14).

One unanticipated finding of this study was the reported denial of ARV refills to defaulters as a punitive measure at the ART units. The punitive measure is taken against PLHIV who default or do not honour the set refill schedules. This report from WLHIV is worrying as adherence interruptions could worsen viral rebound complications and facilitate, not only treatment failure, but peri-conception infection (Osler *et al.*, 2018:122; AIDSinfo, 2019:F-2). Ghana is known for high levels of suboptimal adherence and loss to follow-up (NHARCON 2018:105). Considering that retention in HIV treatment is important to meeting the second and the third 95s of the 2030 HIV agenda (PEPFAR, 2021:24, 45) punitive measures for defaulters returning on their accords seem out of context. An investigation into how defaulters are handled at the facilities is needed for further action in favour of improved ARV supply and adherence.

The need for HWC empathy was also found to be a SC need for the WLHIV. The study found that WLHIV were laughed at when they presented their reproductive issues which made them feel mocked. Perspective-taking and empathy may allow providers to produce an appropriate response to the childbearing issues of WLHIV. An emotion that includes, compassion and tenderness towards people in persons in need of empathy has been documented as a tool in the fight against HIV stigma with some favourable outcomes (Batson *et al.*, 1997:105; Mak *et al.*, 2017:31). Described as the ability to put one's sense of self and judgements aside and step into others' circumstances to understand them, empathy engages meaningfully with others. Taken in the context of patient care, Hojat, (2014:28) describes empathy as "the capacity to view the world from a patient's perspective, without losing sight of one's role and responsibilities. Hojat (2014:28) relates that empathy reflects provider-patient relationship and communication with a positive impact. Safe conception literature also shows that when providers were empathetic

towards WLHIV, they communicate a supportive attitude towards their childbearing demands (Wanyenze *et al.*, 2013:7; Kawale *et al.*, 20).

It was also found in quantitative studies that persons with higher levels of empathy turn to show less stigma to persons living with HIV (Batson *et al.*, 1997:110; Olapegba, 2010:966). Though research on the subject is a growing field, medical literature shows that providers can learn and develop empathy (Hojat 2016:215). Thus, if providers can be helped through training to take on the perspective of WLHIV and understand how they feel without a child, they are likely to put up a supportive attitude. Knowing that WLHIV need to have children to be accepted in marriage, community, and to prove their worth as a whole, and that SC and PMTCT makes reproduction possible with HIV transmission might turn providers to be empathetic rather than judgmental (Batson *et al.*, 1997:105; Mak *et al.*, 2017:31).

In stigmatising, people are judged based on unwanted traits and then discriminatory actions are exhibited towards them (Clay *et al.*, 2017:16). On the contrary, empathising demands that people are understood in their circumstances without judging which is documented to improve provider-client relationships and interaction with favourable outcomes (Hojat, 2016:73). Attitude is said to have cognitive, affective and behavioural dimensions which are amenable to appropriate interventions (Larson and Yao, 2005:1101-1102).

Women living with HIV also need assistance with infertility. In this study, the few WLHIV who were brave and approached the HCWs were those experiencing delay or difficulty with conception. Thus, their approach was seeking redress for infertility rather than SC education. A review of studies on SC revealed that infertility and its attendant problems are prevalent among WLHIV (Chadwick *et al.*, 2011:149). Schwartz and colleagues (2017:42) reported infertility among a cohort of clients enrolled in their implementation SC study and were

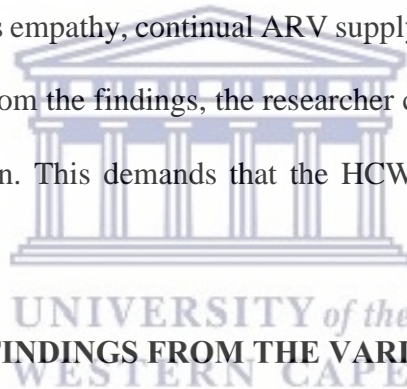
referred for early management in the quest to reduce the heightened risk and vulnerability associated with delayed redress.

On further analysis of the implementation programme, Iyer *et al.*, (2019:1) observed that of the 334 couples enrolled for SC education in South Africa, 65% experienced subfertility. Among the couples experiencing subfertility, a third (1/3) had primary while the rest had secondary subfertility. This finding that suggests that two out of every three women engaged in SC may not achieve pregnancy in six months, it is not out of place. Some authors have suggested that WLHIV should be screened for infertility and be referred as early as possible (Davies *et al.*, 2017:39; Davies *et al.*, 2018:4). This is because infertility delays pregnancy prolonging risky sexual behaviours thereby heightening the risk of seroconversion when fertility intention exists (Matthews *et al.*, 2017:7).

Considering that childlessness is highly stigmatised as well as being HIV positive, WLHIV may be facing layered stigma which they might go to any length to redress (Wanyenze *et al.*, 2013:5; Nattabi *et al.*, 2009:962; Rhodes *et al.*, 2016:4; Finocchiaro-Kessler *et al.*, 2010:1111; Reidpath and Chan, 2005:425). Some WLHIV might want to have children as a cover-up, diverting attention from the possibility of people getting to know their status (Cooper *et al.*, 2007:278). In these circumstances, WLHIV might go to any length to achieve pregnancy to prevent being stigmatised. It is therefore important that SCTPs have modules on infertility screening and early detection for referral and early redress to prevent a backlash on HIV prevention successes.

5.7 CHAPTER SUMMARY AND CONCLUSIONS FROM THE QUALITATIVE FINDINGS

Considering that WLHIV will be the receivers of the SC education from HCWs after they are trained, it is imperative that these women's SC needs were considered to inform the training programme following patient-centred care (Smith and Topham, 2016:374). Through purposive sampling 24 WLHIV were selected from some ART units in the Volta Region and interviewed to get their emic perspectives on their SC needs. The qualitative data collected was reduced using Braun and Clarke's thematic analysis. The findings were that WLHIV need HCW-initiated communication, education on SC strategies, couple-based communication and system-driven strategies such as empathy, continual ARV supply and assistance with infertility to attempt pregnancy safely. From the findings, the researcher concluded that WLHIV had an unmet need for SC information. This demands that the HCWs be equipped to provide the women with SC education.



5.8 TRIANGULATION OF FINDINGS FROM THE VARIOUS SOURCES

The researcher made use of triangulation to integrate the findings and thereby get a full picture of the subject areas for the SCTP from the various data collected. Triangulation refers to the process of integrating findings obtained from multiple sources using different methods of data collection. The process allows for confirmation of findings through the convergence of different perspectives and thereby increasing the credibility and validity of a study. Triangulation also made room for the researcher to gather the strengths of both the qualitative and quantitative methods while minimising the inadequacies of single-source findings on the study (Yeasmin and Rahman, 2012:159; Fusch *et al.*, 2018:22).

Table 5-3: Triangulation of quantitative and qualitative findings during needs-assessment.

Method used	Source/ population	Areas that emerged for the SCTP	Comparison of findings	Remarks
Survey	HCWs	<p>HCWs have poor knowledge and attitude towards SC education on these strategies:</p> <ul style="list-style-type: none"> (a) timed unprotected sexual intercourse (b) timed vaginal self-insemination (c) assisted reproduction (d) ART use for SC (e) Pre-exposure prophylaxis for SC (f) Voluntary male medical circumcision (g) Screening and management of STIs 	<p>These areas were also inferred from interview of WLHIV as stated in item 2. The women were not aware of SC strategies.</p>	<p>The outcomes from both sources typified the findings in the literature review as summed up in the consensus statement and review by Matthews <i>et al.</i>, (2017a) and Davey <i>et al.</i>, (2018) respectively; both providers and clients have limited knowledge on SC. Both providers and clients desire SC training and education respectively</p>
Qualitative interview	WLHIV	<p>The needs identified were:</p> <ul style="list-style-type: none"> (a) Confidential and HCW-initiated communication (b) Need for education on SC strategies (c) Couple-based education on HIV prevention (d) System-driven strategies for SC 	<p>Both HCWs and WLHIV displayed poor knowledge of SC strategies.</p>	<p>Both providers and clients desire SC training and education respectively</p>

Triangulating the findings from the various data sources, the researcher observed that they corroborated one another (Table 5-3). The survey indicated that HCWs had poor knowledge and attitude towards SC strategies. This reflected from the findings from interviews conducted for the WLHIV. When the WLHIV outlined the education they received routinely, except for sexual intercourse without condom, none of the 24 women could identify correctly with any of the SC strategies for reproduction. The mainstay of timing sexual intercourse without condom to the peak of fertility to qualify as a SC strategy was missing. In addition, the report of being laughed or bombarded with questions when enquiring about reproductive issues also reflected poor attitude towards the WLHIV as found in the quantitative study. Further, the interview

brought to the fore the needs of WLHIV regarding SC education. They had need for education on SC strategies which the HCWs had low knowledge in and poor attitude towards.

These observations suggested the need for training on the subject. However, as a first step, a SCTP must be developed for the intervention using the areas suggested from the needs-assessment phase of the current study. These findings therefore confirmed the relevance of this study whose goal is to develop a SCTP for HCWs in the Volta Region of Ghana using the areas that have emerged.



SECTION THREE: DEVELOPMENT OF THE SAFE CONCEPTION TRAINING PROGRAMME

Section two, composed of chapters three, four and five, described the methodology of the empirical study. In chapter three, both qualitative and quantitative data were collected and analysed. The results from both data were presented in chapter four and discussed in chapter five. Triangulation of data was also discussed in chapter five. From the results of the quantitative and qualitative studies, the shortcomings were noted concerning SC for HCW and WLHIV, thus, highlighting the need for a SCTP for HCW to strengthen their practice in SC education.

Based on these findings, the SCTP was developed to be used in training healthcare workers (HCWs) at the antiretroviral therapy (ART) units to enable them to acquire the requisite knowledge and skills to deliver SC education to WLHIV who access HIV care at these facilities. The development of the SCTP is discussed in this section which is composed of a single chapter - chapter six. The tasks outlined in chapter six describes intervention mapping steps two and three activities. These activities are concerned with formulation of interim objectives on changes that should occur based on the needs identified and then using evidence-based methods to design practical programme that address the them (the needs). The SCTP produced has seven modules

CHAPTER SIX: SAFE CONCEPTION TRAINING PROGRAMME

DEVELOPMENT

6.1 INTRODUCTION

In sections one and two of this thesis, the orientation and empirical findings from the first two sub-studies of the project were presented. The background of the study and the literature review (chapters one and two) revealed that incompetence in SC education of WLHIV is attributed to poor knowledge, attitude and skills among HIV care providers. Further, a growing literature on SC implementation studies indicated that training programmes for HIV providers and WLHIV were yielding positive results evidenced by patronage, increasing uptake of SC strategies and recorded pregnancies without horizontal infections.

In section two, the empirical study methodology (chapter three, which also corresponds with IM step 1) was presented. Findings from the survey of HCWs' knowledge, attitude, self-efficacy and interest in SC education (Chapter four) as well as the exploration of SC needs WLHIV in the Volta Region of Ghana (Chapter five) revealed similar findings from the literature.

HCWs had below average knowledge of SC strategies. Poor attitude towards SC strategies, especially timed self vaginal insemination, was also revealed amid high interest and perceived self-efficacy towards same (SC strategies). Exploration of SC needs among WLHIV in the same study setting also revealed that only a 'compromised' form of TUI was being suggested by the HCWs to WLHIV. The TUI is compromised because the WLHIV engage in unprotected sex to achieve pregnancy without timing it to the peak of their fertility which is the fulcrum of the strategy. The golden rule of viral load monitoring was also absent. The WLHIV also expressed the need for education on SC strategies, among others. This presents the logic model

of demand for SC training and education respectively among HCWs and WLHIV but without supply. This was the conclusion drawn from the needs-assessment (in IM step 1).

Observing that implementation studies on SC education and uptake are making remarkable headway through HIV provider training in HIV endemic regions of SSA such as South Africa, Kenya and Uganda (Brown *et al.*, 2016:4-5; Schwartz *et al.*, 2017:45), the researcher studied these samples as a guide for adoption. As the literature review chapter revealed, training as a change method to equip HIV care providers with knowledge, skills, improved attitude and self-efficacy is well established in healthcare settings (Fitzgerald *et al.*, 2005:66; Sabue *et al.*, 2009:7; Richter, 2015:105; Pawinski and Lalloo, 2006:1189; Naicker 2016:1) and Ghana has recorded a fair number of such (GHS, 2017:69; GHS, 2015a:94). With this insight from literature as the grounding backdrop, the researcher adopted face-to-face training as the change method for improving the HCW knowledge, attitude and skills for SC education (Bartholomew Eldredge *et al.*, 2016:357). This is also appropriate considering the challenging ICT infrastructure within the GHS (GHS, 2015b:28) which does not allow online training. These conclusions were fundamentals of IM step 2.

6.2 IM STEP 2: FORMULATION OF THE PROGRAMME OUTCOMES AND OBJECTIVES

This is the objective formulation stage of the intervention mapping process where the researcher spells out the intervention programme s/he intends to develop (Bartholomew Eldredge *et al.*, 2016:284). Apart from being a highly repetitive stage on its own, (De Decker *et al.*, 2014:25), the researcher also observed iteration between the IM steps 2 and 3. The tasks to be accomplished by the end of step 2 include statement of the expected outcomes for behaviour change, specification of performance objectives, selection of determinants for

outcomes and construction of the matrices of change. A logic model of change may also be drawn (Bartholomew Eldredge *et al.*, 2016:284).

Intervention mapping step 2 feeds on the outcomes of step 1. Hence, at the end of step 1, the findings and conclusion drawn which identified the training needs of HCWs (MSH, 2012:51) were used to outline expected outcomes and consequently, performance objectives using the SMART (specific, measurable, attainable, realistic and timed) strategy at the end of this stage (Bartholomew Eldredge *et al.*, 2016:286).

As noted in the background, the cross-sectional survey of the HCWs indicated poor knowledge and attitude (below-average level) towards SC education. Exploration of the emic perspectives of WLHIV on their SC needs revealed that they need confidential and HCW-initiated communication, couple-based education on HIV prevention and assistance with disclosure. They also need education on SC strategies in addition to assistance with infertility, a continual supply of ARVs. Empathy in care also came to light. From these, the SCTP should address the knowledge (cognitive) and attitude (affective) deficits observed featuring the themes derived from exploring the emic perspectives of WLHIV.

However, nursing and midwifery education and training thrives on three domains. These are cognitive, affective and psychomotor domains which translate into training in knowledge, attitude and skills (WHO, 2016c:5). The researcher therefore developed an SCTP which addressed these three domains, to ensure its usefulness for the HCWs using the components of the IMB model as a guide. The model contained the three acceptable domains of training HCWs viz: cognitive (knowledge), affective (attitude) and psychomotor (behavioural skills) (Chong *et al.*, 2016:129; Fisher and Fisher, 1992).

6.3 TRAINING OBJECTIVE FOR SCTP

The SCTP aimed at equipping nurses and midwives at the ART units of the Volta Region with the knowledge, attitude and skills to deliver SC education to women living with HIV who access HIV care at these facilities. Per this programme objective, training seemed the most appropriate change method. Moreover, the few studies on SC implementation piloting in South Africa and Kenya reported success with training workshops (Brown *et al.*, 2016; Mmeje *et al.*, 2016; Schwartz *et al.*, 2017).

At the end of this stage, the IM step 2 tasks were carried out and a drafted matrices of change table was developed to be fed into step 3. The draft was not finalized at this stage because the researcher intended to validate as well as elicit additional themes from the HIV-expert-group through a nominal group technique (NGT) activity. The members of the NGT group also drafted the SCTP. Hence, the finalized matrices of change table, – the end-product of state IM step 2, was produced after the NGT activity. Since the HIV-expert-group's activities are discussed under IM step 3, the finalized matrices of change table is also presented there to minimize repetition.

6.4 IM STEP 3: DESIGNING THE PROGRAMME

At this stage of the intervention mapping, these activities must be undertaken: generation of programme themes as well as the components which needed be sequenced. Then the choosing of change method (a general plan of action to influence the findings in step 1). Further, the researcher is expected to design a practical application to deliver the change method chosen. As outlined earlier in this chapter, the researcher observed that among the change methods such as modelling, social reinforcement and training (Bartholomew Eldredge *et al.*, 2016:361),

training would be most appropriate. This is based on the insight gained from the extensive literature reviewed in chapter two.

Training refers to a planned activity geared towards imparting new or improving knowledge, skill and attitude. Ittner and Doud (1997:1- 4) stress a process of development and delivery of information that trainees will make use of after the training. A training programme is a comprehensive tool made of many parts. These components include 'training goals, learning objectives, subject areas, methods, trainers, trainees, methods of assessment, and locations. It is a practical tool to deal with identified performance challenges (MSH, 2012:52.2 - 52.3). It may be pre-service or in-service training. For in-service training, training may occur on the site or out of the site of application (WHO, 2008:22; Crowley and Mayers, 2015:5).

6.5 METHODS APPLIED IN THE PROGRAMME DESIGN AND DEVELOPMENT

The nominal group technique and workshop were the methods used to design the SCTP. For clarity and flow, the methods are described alongside the procedural activities as outlined in the following sections.

6.5.1 Population, sampling technique and sample size

The population consisted of nursing and midwifery officers, in HIV care (clinical care, public health and education) totalling 96; one (1) regional HIV coordinator; three (3) leaders of the association of PLHIV summing up to 100. Senior nurses, midwives and nurse-midwives were chosen because they would have worked for at least six years in their profession and are usually entrusted with independent decision-making in their domains.

The researcher purposively sampled the size of seven (7) persons who constituted the NGT group (Delbecq *et al.*, 1986:41). These were made up of one (1) public health nurse, one (1)

clinical nurse-midwife, three (3) nurse/midwifery educators, one (1) WLHIV, and the regional HIV trainer. For inclusion, the HCWs should have been in an HIV – related field (as an educator, clinician or public health professional) for at least a year. He/she should also have gone for an HIV-related training/workshop in the past 24 months as Ghana has adopted a new programme of work for 2016 – 2020 and sensitization workshops were held on it (GAC, 2016b). For leaders of the regional association of PLHIV, the female who occupies the top-most executive position was represented. Nominations were sought through invitation letters, e-mails and personal visits by the researcher. As discussed under **the nominal group technique (6.6.1)**, the group is considered an ‘expert group’.

6.5.2 Data collection and analysis process

Data was collected qualitatively and analysed through the proceedings of the nominal group session as described in the section named **the nominal group technique (6.5.1)** that follows.

6.6 GENERATION OF THEMES AND DRAFT FOR THE SCTP

Activities leading to the initial stages of the design of the SCTP started in the first and second steps of the IM process and continued using the nominal group technique (NGT). After gathering the needed information from the assessment of HCWs and interviewing of WLHIV, the researcher convened an ‘expert in HIV care’ group meeting for the selected stakeholders to deliberate on two issues. The first one was to determine from their perspective, as a group, what could constitute the components of a SCTP through the nominal group technique session. The second one was to develop a draft of the topics under the various themes that have emerged from step 1 of the IM process (Bartholomew Eldredge *et al.*, 2016:221; 2016:356).

6.6.1 The nominal group technique

The nominal group technique (NGT), a structured face-to-face group procedure, is one of the many available decision-making as well as consensus-building processes. It makes use of the basic tenet that a group of knowledgeable individuals with diverse expertise and insight into a subject matter of interest (in this situation development of a SCTP for healthcare workers) is more likely to make effective decisions than a lone individual. Thus, a group is superior to individuals in making decisions on a subject matter, since members of a group can generate more and more creative solutions than one individual working alone (through the generation of information that is relevant to the problem at stake).

More so, by its nature, NGT makes room for participants from different backgrounds with different ranks (statuses) to make their contributions without inhibition which results in open discussions (Bartholomew Eldredge, 2016:221; Group Techniques for Programme Planning, 1986, 16 - 18). Delbecq and colleague originated the NGT (Sav, 2015:2). It was a qualitative research method for use in identifying strategic problems and also formulating appropriate and creative programmes to solve them.

The NGT is widely known employed in several health and health-related research works to identify current opinions on a topic, or achieve consensus on it. Some of these are Potter and colleagues' (2003) evaluation of experiences from healthcare services; Dening *et al.*, (2012) study on preferences and views on end-of-life care; patient-centred healthcare professionalism by Hutchings *et al.*, (2010) and priority treatment outcomes by Sanderson *et al.*, 2012. Studies employing NGT, were also done on concerns (Miller *et al.*, 2000) and challenges (Dewar, *et al.*, 2003) with respect to chronic health conditions. Others health related studies also used NGT (Rice *et al.*, 2018, Dobbie *et al.*, 2004; Vella *et al.*, 2000; Drennan *et al.*, 2007; Hutchings

et al., 2010, 2012; Harvey and Holmes, 2012; Sav *et al.*, 2015; Kremer *et al.*, 2016; Oghenewiroro Odu, 2017; Søndergaard *et al.*, 2018; Cho *et al.*, 2019; Tsourtos *et al.*, 2019). Participants in these studies included nurses, doctors, pharmacists, healthcare consumers with various chronic conditions and carers (Vella *et al.*, 2000; Hutchings *et al.*, 2010, 2012).

The researcher used the NGT to gather as much information as possible on the subject matter of interest (components of a SCTP) from the cross-section of knowledgeable stakeholders pooled, to facilitate the development of a very useful training programme (Delbecq *et al.*, 1986:3; McMillan *et al.*, 2016:658) for healthcare workers on SC.

6.6.2 Conduct of the NGT

The scheduled activities for the session went on smoothly at the Skills Laboratory of the School of Nursing and Midwifery within the University of Health and Allied Sciences, Ho Campus, in the Volta Region of Ghana. The session started at 10:05 in the morning and ended about three hours later (McMillan *et al.*, 2016:657). It was attended by seven participants (Delbecq *et al.*, 1986:41). Except for one female executive representing PLHIV in the Volta Region, all persons who attended were nurses, midwives and nurse-midwives. One of the invitees, a Director of Nursing Services and also a trainer in HIV care, honoured the invitation. The rest of the invitees sent their deputies who were either principal nursing officers or a step lower than the 'principal' status. According to the original invitees, they themselves had been occupied with much administrative work. Hence, it was their deputies who performed the professional work and hence attended workshops on HIV care. On that account, the original invitees expressed that their deputies would be more apt at the task than they themselves. In all, seven people (Delbecq *et al.*, 1986:41) from clinical care, public health, education and the

PLHIV executive were represented in addition to the researcher and one of her research assistants.

Before the arrival of the group members, the venue (a room) was organised with tables and chairs in a U-shaped fashion with a flip chart positioned at the open end of the furniture arrangement (U). The participants positioned themselves as they wished and the needed stationeries were distributed on their tables.

After the opening session, the proceeding followed the outline below as delineated by Delbecq *et al.*, 1986:44):

- (a) Silent generation of ideas in writing
- (b) Round-robin recording of ideas
- (c) Serial discussions on the ideas
- (d) Voting to select the most important ideas
- (e) Discussion on the selected ideas.



6.6.2.1 Opening session

The researcher who acted as the moderator for the proceedings facilitated the session. She welcomed the participants and requested for self-introduction. She then briefed the group on the task for the meeting (Delbecq *et al.*, 1986:40-43). She explained that women living with HIV (WLHIV) have the right to have children despite the risk of both vertical and horizontal transmission of infection. The risk of HIV transmission underscores the importance of healthcare worker education on ways of prevention (Orza *et al.*, 2017). Though health education on prevention of the vertical transmission is well established and integrated into the HIV cascade of care, SC education lagged behind (Okeoma Mmeje *et al.*, 2015:156). Aggravating the situation was the absence of established and evidence-based training

programme for healthcare workers on the subject (Matthews *et al.*, 2017:4). In the bid to develop one, the NGT session was therefore a platform to generate and prioritize topics that can be included in the training programme aside those emerging from the studies undertaken. This was made known to the participants earlier in their invitation letters.

Further, the moderator explained the NGT procedure to the group. She clarified the group objectives, the roles of each member, the importance of the task ahead, the relevance of each member's contribution and how each input would be utilized (Delbecq *et al.*, 1986:43). The meeting was conducted in English as all the participants were tertiary level certificate holders and expressed themselves without difficulty.

6.6.2.2 Silent generation and writing of ideas

The moderator presented the topic for deliberation to the group in a written form on the flip chart and read it out to the group. It read "We want to develop a training programme which nurses and midwives can use to educate women living with HIV on SC. What topics shall we include in it?" The concept on SC was explained in the context of the projected topic. The group was then told to silently generate and write out ideas on the topic in short phrases or statements on the plain sheets provided. This was done independently for about 20 minutes (Delbecq *et al.*, 1986:45; McMillan *et al.*, 2016:656).

6.6.2.3 Round-robin recording of ideas

The group members engaged in round-robin recording of the ideas generated. Thus, one after the other, each group member read out one of his/her ideas at a time. The round-robin recording was continued until all the ideas generated were read out and recorded by the moderator on the flip chart which was strategically placed and was visible to all members (Delbecq *et al.*,

1986:47; McMillan *et al.*, 2016:656). This was done without any discussion. About eighteen (18) points were written out.

6.6.2.4 Serial discussions on the ideas

The following ideas were recorded from the previous stage for the discussion session (Delbecq *et al.*, 1986:47; McMillan *et al.*, 2016:656).

- (i) Awareness creation that WLHIV have the right to have children
- (ii) Periodic screening of HIV – affected couples
- (iii) Education of WLHIV on HIV and its transmission
- (iv) Education on nutrition and its attendant taboos
- (v) Education on HIV/AIDS, antiretroviral drugs and their pharmacology
- (vi) Dangers of HIV transmission (antepartum, intrapartum and post-partum)
- (vii) Education on stigma
- (viii) Capacity building for nurses and midwives on HIV/AIDS transmission and care
- (ix) Super-infection in HIV positive persons
- (x) Regular antenatal care and delivery in the health facility
- (xi) Safer sex and its types
- (xii) Menstrual cycle
- (xiii) Delivery techniques used in the health facility
- (xiv) Monitoring of viral loads
- (xv) Worker empathy
- (xvi) Family planning education
- (xvii) HIV management and maintenance
- (xviii) The socio-cultural environment of the client; disclosure and violence, taboos

Each idea recorded was discussed thoroughly for clarity and importance to the topic. Intermittently, the moderator interrupted the discussion when it was deviating from the topic. The moderator also encouraged questions and comments from group members which enhanced the discussion and understanding of the ideas recorded. However, the originator of an idea was not under compulsion or obligation to clarify or explain his/her idea because any group member could play that role. (Delbecq *et al.*, 1986:51-54; McMillan *et al.*, 2016:656). The completion of this stage was followed by the next which is the voting stage. Having observed that the ideas were so many with some overlapping ones, the group members agreed that the ideas should be reframed or reworded to allow for merging of similar ones while the unrelated items (vi, x, xiii and xvi) were discarded (McMillan *et al.*, 2016:656). This exercise produced 8 refined items as follows in Table 6-1.

Table 6-1: The condensed item table from the discussion

Items	Remarks
Awareness creation that WLHIV have the right to have children	Maintained
Periodic screening of HIV – affected couples for management	Maintained
Capacity building for nurses and midwives on HIV/AIDS transmission and new emerging issues in management	iii, viii and ix merged with item 3
Safe and unsafe sex	xi and xii merged with item 4
Education/counselling on HIV medication and its basic pharmacology	iv, xiv and xvii merged with 5
Education on stigma	Maintained
Worker empathy	Maintained
The socio-cultural environment of the client; disclosure and violence, taboos	Maintained

6.6.2.5 Voting to select the most important ideas

At this point, the group members voted to prioritise the ideas. The moderator guided the group members by establishing the criteria to use in prioritising the items. Each member selected the

six most important items from the eight points above. Each item was recorded on a “3 by 5” index card made available to the group members. They then ranked the selected items with the most important being assigned the highest mark of “6” while the least important received “1”. The ratings were later tallied on the flip chart (Delbecq *et al.*, 1986:54-61; McMillan *et al.*, 2016:657). The results from the tallying ranked the items as follows in Table 6-2.

Table 6-2: Ranked items after voting

SN	Items Ranked	Number of Votes
1	Education/counselling on HIV medication and its pharmacology (basic)	36
2	Awareness creation that WLHIV have the right to have children	32
3	Capacity building for nurses and midwives on HIV/AIDS transmission and new emerging issues in management	30
4	Periodic screening of HIV – affected couples for management	22
5	Safe and unsafe sex	19
6	Worker empathy	12
7	Education on stigma	11
8	Sociocultural environment of the client; disclosure and violence, taboos	9

6.6.2.6 Discussion on the selected ideas.

The ranked items were discussed with the participants again and were accepted as the true reflection of the deliberations of the group (Delbecq *et al.*, 1986:62; McMillan *et al.*, 2016:657). The members however said that though the first six items were chosen as the most important, the rest two (items VII and VIII) should not be discarded as they were equally significant. The suggestion was that they should be embedded into other major topics. Thus ‘education on stigma’ and ‘sociocultural environment of the client; disclosure and violence as well as taboos could be placed under ‘capacity building for nurses and midwives on HIV/AIDS transmission and new emerging issues in management.

After the development of these themes (as additional proposed components of the SCTP), the researcher reminded the participants that per the agenda, the next item was to determine the

type of training programme to be developed – whether the HCWs would be trained in their respective workplaces (hospitals) or outside their facilities. The researcher wanted to remind the participants of what that second NGT session was all about and what the issue at hand was. However, a unanimous agreement was reached before the silent generation of ideas could be commenced. The participants agreed that since the facilities usually had 4 or fewer HCWs on duty per an ART unit, it was ideal and more economical to convene them together at a centre for the programme than on-the-job training where more teams of trainers and observers would be required to move around the selected facilities. The researcher also saw that the suggestion was plausible, time-saving and agreed to it.

6.6.2.7 Conclusion of the NGT session

The group members were refreshed with snacks and drinks. Lunch packs were served during the break time while they prepare to return for the last session of generating topics for the various themes as a draft for the SCTP.

6.6.3 Areas that emerged for the SCTP

The researcher compiled the findings from the survey of HCWs, interview of WLHIV, and NGT session of the expert panel as the areas that emerged for the development of the SCTP (Bartholomew Eldredge *et al.*, 2016:356; Verbestel *et al.*, 2011:14). Some of the findings verified others while some also stood alone as observed in the remarks column of Table 6-3.

Table 6-3: Emerged themes and sub-themes for the development of a SC training programme

Method used	Source/ population	Themes and sub-themes that emerged for the SCTP	Remarks
Qualitative interview	WLHIV	<ol style="list-style-type: none"> 1. Confidential and HCW-initiated communication. <ol style="list-style-type: none"> a. Inability to approach HCWs on childbearing. b. Inadequate time for personal engagement with HCWs. c. One-on-one confidential conversation. 2. Need for education on SC strategies. <ol style="list-style-type: none"> a. WLHIV's need for SC education. b. Dependence on HCWs for SC strategies. 3. Couple-based education on HIV prevention. <ol style="list-style-type: none"> a. WLHIV as subservient partners in fertility decisions. b. Need for assistance with disclosure 4. System driven strategies for SC. <ol style="list-style-type: none"> a. Need for HCW empathy. b. Need for continual ARV supply. 	Item 2b also emerged from a survey among HCWs.
Survey	HCWs	Poor knowledge and attitude were observed among HCWs concerning the SC strategies.	These areas were also inferred from the interview of WLHIV.
Nominal group technique	Experts in HIV care	<ol style="list-style-type: none"> i. Education/counselling on HIV medication and its pharmacology (basic). ii. Awareness creation that WLHIVs have the right to have children. iii. Capacity building for nurses and midwives on HIV/AIDS transmission and new emerging issues in management. iv. Periodic screening of HIV – affected couples (partners in serodiscordant relationships) for management. v. Safe and unsafe sex. vi. Worker empathy. vii. Education on stigma. 	<p>Item vi also emerged from the interview of WLHIV.</p> <p>The inability of the members of the expert group to list any of the SC strategies during the NGT is an indication of poor knowledge on the subject matter.</p>

After deducing the themes for the SCTP from the outcomes of the HCWs' survey, interview of WLHIV and NGT activity of the HIV-expert-group, the matrices of change objective table which is to drive the design and development of the programme was finalized (as per Table 6-

4).

Table 6-4: The finalized matrices of change objectives for safe conception training for HCWs

Module Name	Programme outcome objectives	Performance objectives	Personal determinants for safe conception education			
			Knowledge	Attitude	Self-efficacy	Skills
A Dignity conserving HIV care	After completing this module, HCWs will acquire at least 50% of the requisite knowledge, attitude, and skills to deliver dignified reproductive care to WLHIV in the context of childbearing	1. HCWs will render dignified reproductive care to WLHIV in the context of childbearing	<p>HCWs will:</p> <p>Discuss the components and importance of rendering dignity conserving reproductive care to their clients</p> <p>List and explain human rights that are closely related to healthcare</p>	<p>HCWs will show respect to clients</p> <p>HCWs will express positive sentiments towards maintaining client's rights</p>	<p>HCW will express confidence about ways of showing respect to their clients</p> <p>HCWs will express confidence in their ability to uphold their client's rights in the course their interactions</p>	<p>HCWs will demonstrate respect in their interactions with clients</p> <p>HCWs will demonstrate upholding clients' rights in the course of their interactions with them</p>
		2. HCWs will identify personal experiences of stigma and discrimination	<p>HCW will narrate how personal experience of stigma affected them</p>	<p>HCWs will express bad sentiments about their personal experiences of stigma and discrimination</p>	<p>HCWs will express their ability to harness such experiences to care for their clients</p>	<p>HCWs will demonstrate to their clients how to use healthy coping mechanisms to achieve resilience in the face of stigma and discrimination</p>
		3. HCWs will limit interactions that demonstrate stigma and discrimination in caring for their clients	<p>HCWs will outline stigmatizing and discriminatory situations and their effects on HIV response (WLHIV, families, community, nation etc.)</p>	<p>HCWs will express negative attitude towards stigmatizing and discriminatory interactions.</p>	<p>HCWs will express confidence in their ability to interact with clients without stigmatizing or discriminating against them</p>	<p>HCWs will demonstrate non-stigmatizing and non-discriminatory interaction with their clients</p>

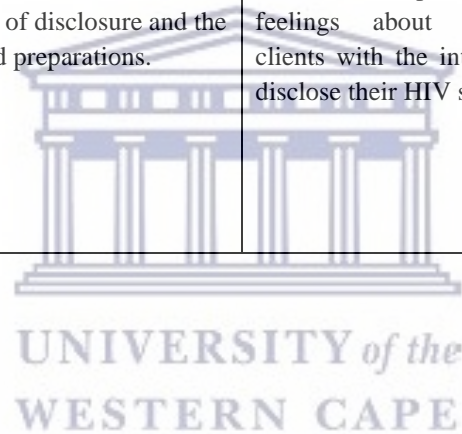
Module Name	Programme outcome objectives	Performance objectives	Personal determinants for safe conception education			
			Knowledge	Attitude	Self-efficacy	Skills
		4. HCWs will render empathetic care to their clients	HCWs will discuss ways of demonstrating empathy in the care of their clients	HCWs will express willingness to employ empathy in the care of their clients.	HCW will express confidence about their ability to demonstrate empathy in their interaction with their clients.	HCWs will demonstrate empathy in their interaction with their clients
B Communi- cation	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to effectively communicate with their clients for SC education	HCW will hold effective conversation with their clients using the various types of communication (including verbal and non-verbal) throughout SC education	HCWs will discuss the various types of communication (including verbal and non-verbal) relating their importance in SC education	HCWs will express positive feelings towards the appropriate use of each of the communication types (including verbal and non-verbal) and their use in SC education.	HCWs will express confidence about the appropriate use of the various types of communication (including verbal and non-verbal) and their use in SC education	HCWs will demonstrate the appropriate use of the various types of communication (including verbal and non-verbal) in a SC education role play.
		HCWs will initiate communication with their clients on SC education	HCWs will outline the various ways to initiate SC communication with their clients	HCW will express positive feelings about the various ways of initiating SC education with WLHIV	HCWs express confidence about their ability to initiate SC conversation with their clients.	HCWs demonstrate different ways of initiating SC conversation in a role play
		HCWs will use active listening to direct their SC conversation with their clients	HCWs will discuss the various techniques of active listening	HCWs will express positive feelings about using most of the techniques of active listening.	HCWs will express confidence about their ability to use active listening techniques when holding SC conversations with their clients.	HCWs will exhibit active listening techniques in their SC education sessions.

Module Name	Programme outcome objectives	Performance objectives	Personal determinants for safe conception education			
			Knowledge	Attitude	Self-efficacy	Skills
		HCWs will use active listening to effectively manoeuvre communication barriers during their SC conversation with clients	HCWs will discuss the various barriers to effective communication including how to spot and manage them.	HCWs will express positive feelings about how to identify and effectively manoeuvre communication barriers during conversations with their clients	HCWs will express confidence about their ability to spot and effectively handle communication barriers during conversations.	HCWs will identify communication barriers and effectively handle them in the course of their SC conversations with their clients.
C Antiretroviral therapy (ART)	After completing this module, HCWs will be able to differentiate among the different antiretroviral treatment courses and their appropriate application in HIV care with at least 50% accuracy	HCWs will relate the importance of ARVs to HIV management and prevention HCWs will classify the various ARVs available for HIV treatment	HCWs will discuss facilitation of treatment as prevention and U = U in relation to SC HCWs will discuss the various ARVs by name, classification, mode of action and combinations in HIV treatment	HCWs will express positive feelings about engaging clients in discussions on facilitating treatment as prevention as part of the SC education Not applicable	HCWs will express confidence about their ability to educate clients on facilitating treatment as prevention, relating it to SC education HCWs will express confidence in their ability to name, classify and offer the right combination of ARVs.	HCWs will demonstrate education on treatment as prevention and its facilitation in relation to SC education HCWs will rightly name and classify ARVs and also demonstrate their combinations for treatment accurately.

Module Name	Programme outcome objectives	Performance objectives	Personal determinants for safe conception education			
			Knowledge	Attitude	Self-efficacy	Skills
		HCWs will apply the right courses of ARV combinations to the various classes of clients accurately per the prevailing guidelines	HCWs will: discuss the various classes of clients and the ARV combinations courses applicable to them based on the prevailing guidelines including: treatment as prevention.	HCWs will express positive views about the use of ARVs as adjuncts to SC	HCWs will express confidence in their ability to identify the right ARV combination course for the right classes of clients based on the prevailing guidelines	In a group work, HCWs will rightly match the appropriate ARV combination courses to the right class of clients based on the prevailing guidelines
D	After completing this module, HCWs will be able to educate reproductive-aged WLHIV on safer sex during SC education with at least 50% accuracy.	HCWs will understand safer sex and its importance in HIV prevention HCWs will discuss safer sex in the context of SC with their clients.	HCWs will explain how safer sex prevents new HIV infections HCWs will discuss safer sex strategies that are relevant to SC HCWs will discuss situations that can compromise the adoption of safer sex	HCWs will express positive feelings about discussing ways of preventing new sexual HIV infections with their clients HCWs will express positive views about discussing safer sex strategies applicable to SC with their clients	HCWs will express confidence about discussing ways of preventing new sexual HIV infections with their clients HCWs will express confidence about their ability to discuss safer sex strategies applicable to SC with clients	In role plays, HCWs will demonstrate discussions on the prevention of new sexual HIV infections with their clients HCWs will act out discussion of safer sex strategies applicable to SC with clients

Module Name	Programme outcome objectives	Performance objectives	Personal determinants for safe conception education			
			Knowledge	Attitude	Self-efficacy	Skills
E Reproductive choices in HIV	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to educate WLHIV on SC strategies.	HCWs will accept to render SC education of WLHIV as part of reproductive health care	HCWs will discuss the importance of SC education in the context of reproductive rights and HIV prevention	HCWs will give positive expressions about incorporating SC education into reproductive health care.	Not applicable	Not applicable
		HCWs will be conversant with each of the SC strategies	HCWs will describe each of the SC strategies and its use.	HCWs will express positive views about the various SC strategies including the 'unnatural' ones	HCWs will exhibit confidence about their ability to educate clients on each of the SC strategies	Not applicable
		HCWs will conduct SC education including appropriate combination of strategies for clients based on serostatus dynamics	HCWs will outline SC education with appropriate description of strategy combinations for clients based on serostatus dynamics	HCWs will express positive feeling about educating clients on SC strategies and helping them to make appropriate choices	HCWs will express confidence about their ability to educate their client on SC strategies and helping them to make appropriate choices.	HCWs will demonstrate SC education of their clients including guiding them through choice-making appropriately.
F Infertility in women living with HIV	After completing this module, HCWs will be able to assess reproductive-aged WLHIV for infertility during SC education with at least 50% accuracy.	HCWs will identify infertility as a contributory factor to new HIV infection	HCWs will discuss infertility in the context of reproduction and SC	HCWs will express positive feelings about the benefits of infertility treatment on HIV prevention
		HCWs will conduct infertility assessment for reproductive-aged WLHIV with fertility intentions	HCWs will describe strategies for infertility screening	HCWs will express positive feelings about infertility screening as part of SC education	HCWs will express confidence about their ability to screen clients for infertility as part of SC education	HCWs will demonstrate infertility screening as part of SC education

Module Name	Programme outcome objectives	Performance objectives	Personal determinants for safe conception education			
			Knowledge	Attitude	Self-efficacy	Skills
G	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to help WLHIV in disclosing their HIV status to their partners	HCWs will endorse helping WLHIV to disclose their HIV status	HCWs will discuss the types of disclosure as well as the advantages and disadvantages of disclosure	HCWs will express positive feelings about helping their clients with the intention to disclose their HIV status	Not applicable	Not applicable
		HCWs will prepare clients with intention to disclose to go through the process	HCWs will discuss the stages of disclosure and the related preparations.	HCWs will express positive feelings about preparing clients with the intention to disclose their HIV status	HCWs will express confidence about their ability to prepare their clients with the intention to disclose as well as support them during and after the process	HCWs will: demonstrate the preparation of clients for the disclosure process. demonstrate how to support a client during and after the disclosure process



6.7 DEVELOPMENT OF THE DRAFT SCTP

The group re-convened after a short break. The researcher produced a printed copy of all the themes that emerged from the previous step through to the NGT session. The group members were divided into two groups of three and four members. Each group was given the printed themes. The group members were requested to brainstorm and list the topics that could be treated under each theme (Bartholomew Eldredge *et al.*, 2016:366). Using the stationary provided, this task was executed and the papers were collected from the participants. The group finally closed after three hours. They were given between forty (40) and hundred (100) Ghana cedis for transportation. Those who had to travel to further destinations received the higher amount.

In conclusion, the researcher thanked the group members for their presence and for participating in the exercise with such enthusiasm. Some group members also commended the researcher for the foresight to develop such a training programme. They expressed interest in the subsequent activities of the development process of the training programme and promised to be of help when called upon. Some hoped to participate in the training sessions when the programme was developed. The group was dissolved and the interaction brought to an end.

Using the topics developed by the group, the literature reviewed and in consultation with an HIV-expert-group (MSH, 2012:52.15), the researcher developed the SCTP following Chinn and Kramer's (2015:157-168) steps in knowledge development in nursing; principles of andragogy (Taylor *et al.*, 2014:1563), and steps to programme development in Management Sciences for Health (2012:52.1-528.8).

The principles of andragogy demand that the programme be interactive and engage the learners building on their experiences. To ensure this, the researcher followed the CDC's 'How to

captivate and motivate the adult learner; a guide for instructors providing in-person public health training' (CDC, 2018:1-18). It is stressed that adult learners must know why the training is important, how they could utilise it and be presented with the opportunity to practice while learning as well as share their experiences. Also, a variety of training delivery techniques must be used to keep them active.

Chinn and Krammer (2015:157-160) indicate that in knowledge development, the structure of the programme developed must outline in terms of its purpose, assumptions and target participants. Management Sciences for Health (MSH, 2012:52.3) also recommends that a training programme is structured in such a way that it has the document features sequenced modules, learning objectives, activities with training goals, methods of training, trainers, trainees, programme evaluation and locations for training. With these as a guide, the SCTP was developed.

6.7.1 Quality assurance for the SCTP

As part of the SCTP development process, the draft as well as the finalized programme was reviewed by the researcher's supervisors and three purposively chosen experts (a gynaecologist in HIV care, a medical doctor representing NACP/STI and a nurse educator with a PhD in health sciences education). The two trainers in HIV care also reviewed the programme (MSH, 2012:52.15).

6.8 OVERVIEW OF THE SCTP

The SCTP has seven subject areas (termed modules) which are named alphabetically as A, B, C, ... G. Each module has topics and sub-topics which are sequenced to aid the smooth flow of teaching and learning. The SCTP also features training objectives for each module and the

teaching and learning methods. Following is an overview of the SCTP. The full programme is attached as an appendix (see Appendix 1).

6.8.1 Introduction to the programme

Facilitator's (or trainer's) role:

As a facilitator of the programme, you must:

1. Establish rapport with the participants.
2. Welcome them to the programme and thank them for honouring the invitation.
 - (a) Inform participants to sit in a horse-shoe shape facing the flip chart/whiteboard and the projector.
 - (b) Introduce yourself and co-facilitators to the participants (name, facility, etc).
 - (c) Let participants introduce themselves to the hearing of everyone present.
 - (d) Assist participants to form five groups for exercises.
 - (e) Lists and discusses the expectations of the participants for the SCTP. Ask the participants these questions:
 - (i) Why did you honour the invitation to this programme?
 - (ii) What do you anticipate gaining at the end of the programme?
 - (iii) How will lessons learnt in this programme impact your duties at your facilities?
 - (f) Inform the participants that their input is needed to improve the training hence they will be required to evaluate the programme truthfully at the end of the programme by:
 - (i) Suggesting ways of improving the programme through answering filling-in questions.
 - (ii) Taking part in focus-group discussions

- (g) Lead the class to establish ground rules to guide the conduct of participants during the programme
 - (i) On the use of mobile phones – they should be put off or put on vibration; no phone calls in the classroom etc.
 - (ii) Interactions with one another – e.g., colleagues should not be interrupted amid their submission, only persons called upon by the facilitator should talk, only one person should talk at a time etc.
 - (iii) Participation in exercises - every participant is expected to take part in the class activities; each group should appoint a representative for presentations etc.
3. Presents an overview of the SCTP to the participants using PowerPoint slides.
- (a) Modules A: Dignity conserving HIV care.
 - (i) Dignity in healthcare
 - (ii) Components of dignity in healthcare
 - (iii) Patients' rights and freedom
 - (iv) Stigmatization and discrimination in HIV care
 - (v) Worker empathy
 - (b) Module B: Communication
 - (i) Communication
 - (ii) Communication as a process
 - (iii) Forms of communication
 - (iv) Barriers to effective communication snack
 - (c) Module C: Antiretroviral Therapy
 - (i) Lifecycle of HIV and stages of infection
 - (ii) Classes of antiretroviral medications and their modes of action
 - (iii) Antiretroviral therapy-based (biomedical) HIV preventive strategies

- Treatment as preventions (TasP)
 - Pre-exposure prophylaxis and post-exposure prophylaxis (PrEP)
 - Undetectable = Untransmittable
- (iv) ART and reproduction in women living HIV (WLHIV)
- (d) Module D: Safer sex in the context of procreation
- (i) Definition of safe sex
 - (ii) Safer sex in HIV prevention
 - (iii) Strategies of safer sex
 - (iv) Safer sex in the context of SC
- (e) Module E: Reproductive choices in HIV
- (i) SC strategies
 - (ii) Adjuncts to SC strategies
- (f) Module F: Infertility in women living with HIV
- (i) Infertility and SC
 - (ii) Causes of infertility
 - (iii) Treatment of infertility
 - (iv) Screening for infertility among women living with HIV
- (g) Module G: HIV status disclosure
- (i) Definition of disclosure
 - (ii) Types of disclosure
 - (iii) The disclosure processes
 - (iv) Effects of disclosure and non-disclosure
 - (v) Preparing a client for disclosure



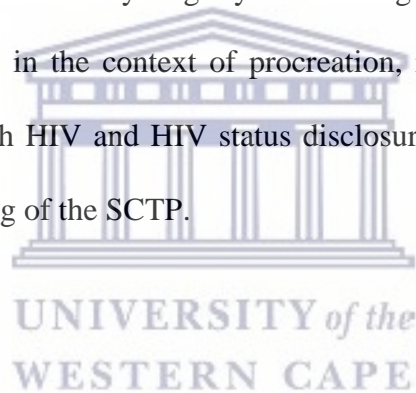
Table 6-5: A summary of the safe conception training programme (SCTP) modules

Module name	Module objective	Outcome Objectives	Performance objectives	Lessons of the module
A	Dignity conserving HIV care	HCWs will acquire the requisite knowledge, attitude and skills to deliver dignified reproductive healthcare to WLHIV.	<p>After completing the module, HCWs will be able to:</p> <ol style="list-style-type: none"> 1. Explain the importance of showing respect to our clients 2. Discuss the components of dignity conserving care. 3. List patient's rights that are closely related to healthcare (knowledge). 4. Identify personal experiences of stigma and discrimination and relate to client care. 5. Outline the effects of stigma and discrimination on HIV response (WLHIV, families, community, nation etc.). 6. Outline ways of showing empathy in patient care 	<ol style="list-style-type: none"> 1. Dignity in healthcare 2. Components of dignity in healthcare 3. Stigmatization and discrimination in HIV care 4. Worker empathy
B	Communication	HCWs will acquire the knowledge and skills necessary to educate WLHIV on SC effectively.	<p>After completing the module, HCWs will be able to:</p> <ol style="list-style-type: none"> 1. Outline the types of communication 2. Discuss the importance of non-verbal communication 3. List barriers to effective communication 4. Discuss effective measures of overcoming barriers to effective communication 5. Outline at least four indicators of active listening 6. Express positive attitude towards HCW-initiated communication 	<ol style="list-style-type: none"> 1. Communication defined 2. Communication as process 3. Forms of communication 4. Barriers to effective communication
C	Antiretroviral therapy (ART)	The HCWs will be able to differentiate among the different antiretroviral treatment courses and their appropriate application in HIV care.	<p>After completing the module, HCWs will be able to:</p> <ol style="list-style-type: none"> 1. Mention the different classes on drugs available for HIV treatment. 2. List the different antiretroviral treatment courses available for HIV care. 3. Discuss the importance of treatment as prevention in HIV care and prevention (especially SC). 4. Outline the conditions that facilitate the achievement of 'undetectable = untransmittable' in persons living with HIV. 	<ol style="list-style-type: none"> 1. Lifecycle of HIV and stages of HIV infection 2. Classes of antiretroviral medication and their modes of infection 3. Treatment as prevention (TaSP) 4. Pre-exposure prophylaxis 5. Undetectable = untransmittable 6. ART and reproduction in women living with HIV.

Module name	Module objective	Outcome Objectives	Performance objectives	Lessons of the module
D	Safer sex in the context of procreation	After completing this module, HCWs will be able to educate reproductive-aged WLHIV on safer sex during SC education.	After completing the module, HCWs will be able to: <ol style="list-style-type: none"> 1. Define safer sex. 2. Outline strategies that can be adapted to practice safer sex. 3. Discuss safer sex in the context of SC. 4. Discuss situations that can compromise the adoption of safer sex. 	<ol style="list-style-type: none"> 1. Definition of safe sex 2. Safer sex in HIV prevention 3. Strategies of safer sex 4. Safer sex and SC
E	Reproductive choices in HIV	It is expected that HCWs will acquire the necessary knowledge, attitude and skills to educate WLHIV on SC strategies.	After completing the module, HCWs will be able to: <ol style="list-style-type: none"> 1. List the SC strategies available for WLHIV. 2. Discuss adjunct strategies necessary for the effectiveness of SC. 3. Express positive feelings about unnatural SC strategies. 4. Take a WLHIV through education on SC strategies. 	<ol style="list-style-type: none"> 1. SC strategies 2. Adjunct to SC strategies
F	Infertility in women living with HIV	After completing this module, HCWs will be able to assess reproductive-aged women living with HIV for infertility during SC education.	<ol style="list-style-type: none"> 1. Define infertility 2. Outline the causes of infertility 3. Conduct an infertility assessment for reproductive-aged WLHIV who access care at the facility. 4. Discuss the implications of infertility for WLHIV. 	<ol style="list-style-type: none"> 1. Infertility and SC 2. Causes of infertility 3. Treatment of infertility 4. Screening for infertility among women living with HIV
G	HIV status disclosure to a partner	HCWs will acquire the knowledge and skills needed to help WLHIV in disclosing their HIV status to their partners.	<ol style="list-style-type: none"> 1. Differentiate between the different types of disclosure. 2. Outline the pros and cons of disclosure and non-disclosure. 3. Discuss the process of disclosure. 4. Demonstrate the preparation of a client for disclosure. 5. Outline the importance of disclosure in the practice of SC 	<ol style="list-style-type: none"> 1. Definition of disclosure 2. Disclosure process 3. Types of disclosure 4. Effects of disclosure 5. Preparing a client for disclosure

6.9 CHAPTER SUMMARY

Chapter 6, the only chapter of section 3 presented the SCTP development process at IM steps 2 and 3. After deducing the themes for the programme development, objectives were formulated which gave direction to the programme development. Using both NGT and workshop the draft SCTP was developed and then fine-tuned by the researcher. The Chinn and Kramer's principles of knowledge development in nursing, the steps to programme development in Management Sciences for Health, tenets of andragogy as well as the CDC's guide to captivating adult learners were observed during the programme development. The revised SCTP had 7 modules namely dignity conserving HIV care, communication, antiretroviral therapy, safe sex in the context of procreation, reproductive choices in HIV, infertility in women living with HIV and HIV status disclosure to a partner. The following section (4) discusses the piloting of the SCTP.



SECTION FOUR - STEP FOUR: PILOTING AND EVALUATION OF THE SCTP

The SCTP was developed to equip HCWs at the ART units in the Volta Region with the necessary knowledge and skills for safe conception education of WLHIV. The development went through several phases of validation to ensure its quality (see Table 7-1). The last one was the piloting. The SCTP was pretested on a cohort of 20 HCWs to determine its feasibility, acceptability and effectiveness as a training tool. Besides, the pilot test was also aimed at eliciting constructive recommendations from the participants and facilitators to help fine-tune the training programme thereby enhancing its quality and value in accord with objective four of the study which **was to pilot and refine the training programme developed for the healthcare workers at the ART units on SC among WLHIV.**

This section unfolds in three chapters. The methodology of the piloting for the evaluation of the SCTP is presented in chapter seven which resulted in the collection of both quantitative and qualitative data. The findings and discussion of the quantitative segment of the evaluation are contained in chapter eight while that of the qualitative section is presented in chapter nine.

**CHAPTER SEVEN: METHODOLOGY FOR PILOTING THE SAFE
CONCEPTION TRAINING PROGRAMME**

7.1 INTRODUCTION

Piloting is of importance in programme development. It refers to the trying out of a new programme on the intended participants, strictly following the implementation plan (Bartholomew Eldredge *et al.*, 2016:464). As a form of formative evaluation, it tests the feasibility and effectiveness of the programme in achieving the goal of its development. It can make use of interviews, focus group discussions, pre- and post-test as well as written evaluation for assessment (Bartholomew Eldredge *et al.*, 2016:464; I-TECH, 2010:2-3). To be thorough, the evaluation process was based on the context, input, process and product (CIPP) model developed by Stufflebeam (2003) (Figure 7-1).

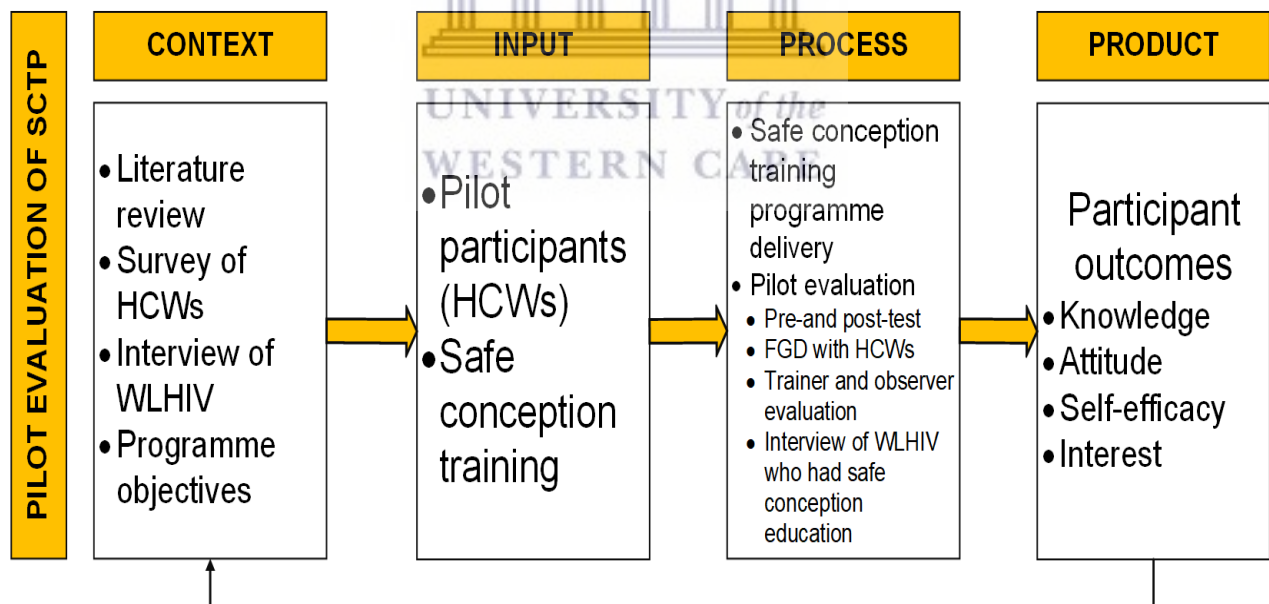


Figure 7-1: The CIPP model of evaluation conceptualised. Source: Stufflebeam (2007).

The context, input, process and product model is a “process of delineating, obtaining and providing useful information for judging decision alternatives” (Stufflebeam, 1971:267). By

its components, it lends itself to planning, implementing and evaluation decision-making about interventions (Stufflebeam, 1971a:268). The CIPP model defines evaluation a “a process of delineating, obtaining, reporting, and applying descriptive and judgmental information about some objects’ merit, worth, probity and significance in order to guide decision-making, support accountability, disseminate effective practices and increase understanding of the involved phenomena” (stufflebeam, 2003:10) which are the reasons for piloting the SCTP. By its structure, the CIPP model encourages ongoing formative and summative evaluation for the purpose of improvement (Stufflebeam 2003:2; Gandomkar, 2018:95) in accordance with its basic tenet which is to use the feedback of the evaluation for the improvement in programmes (Stufflebeam, 2003:8; 2015:5). This basic tenet is the researcher’s goal for piloting the SCTP.

Among other well-known training evaluation models such as Kirkpatrick’s, goal free and logic models, Gandomkar (2015:793) finds the CIPP model more suited for programme design and improvement. Mirzazadeh *et al.*, (2016:15) found the CIPP model more apt, especially in the field of training programmes in health because apart from providing context evaluation information for convincing stakeholders, it caters for all steps of developing a training programme. Zhang *et al.* (2011:59) observed that the CIPP model is one of the most widely used evaluation tools. Its application has spanned many, both short and long term, interventions both in the US and around the world (stufflebeam, 2003:2). Developed in 1971 mainly for education evaluation in the US, its use has crossed that confine. Over the years, the CIPP model has been used successfully in evaluating diverse fields including nursing (Lippe and Carter, 2018:10; Singh, 2004); medical education (Mohebi *et al.*, 2011; Horgan, 1992:913; Mirzazadeh, 2016:17; Steinert *et al.*, 2005) and education (Zhang *et al.*, 2011; Combs *et al.*, 2008; Tormak *et al.*, 2013).

The CIPP model was adopted for the pilot evaluation as the outlined advantages will be of much benefit to the researcher who needed such information to revise the SCTP. Moreso, the CIPP model blends well with the intervention mapping structure (the overarching framework that underpins the SCTP development) as well as the IMB model which provides the theoretical framework for the study. This blending enabled coordination and facilitation of the evaluation process demonstrating their complementarity. That the CIPP model also makes room for the use of multiple methods of data collection and its components may be engaged selectively and in a different sequence as determined by the evaluator (Stuffelbeam, 2003:53) enhances evaluation. Thus, as in figure 7-1, information collected pre- and post- SCTP development and piloting was useful in judging the merit, worth and significance of the training programme.

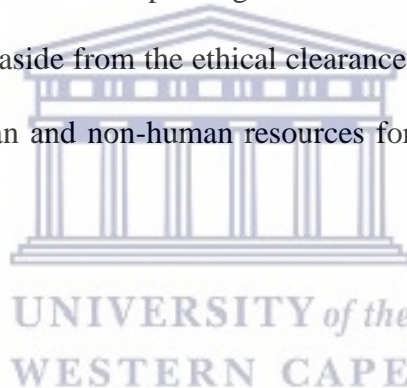
The context evaluation component helped in affirming the identified training needs of the HCWs. The input evaluation component helped determine the relevance and responsiveness of the SCTP programme in addressing the needs identified during the situation analysis at IM step 1. The process evaluation component helped in monitoring the programme roll-out and procedural challenges that needed to be addressed to improve effectiveness while the product evaluation component helped in assessing the pilot outcomes and then judging the usefulness of the SCTP to the intended beneficiaries (HCWs and WLHIV).

The I-TECH (2010:1) stated that the feedback from a comprehensive evaluation makes room for the identification of the strengths and weaknesses inherent in the programme. Effecting the evaluation feedback constructively means incorporating the opinions of the intended users thereby improving the programme and making it a better version for subsequent use (I-TECH, 2010:1; Bartholomew Eldredge *et al.*, 2016:469). To make use of these benefits for improvement, the SCTP was pilot-tested on a cohort of 20 HCWs in a two-day workshop which helped to test its feasibility and effectiveness. During the pilot-testing, programme content,

materials and delivery strategies were assessed for fitness appropriateness through the evaluation feedback received from the participants. It also made room for a comprehensive evaluation of the programme as a whole (I-TECH, 2010:1). The researcher followed the tips for trainers on providing effective training from the Community Tool Box (2017), an online resource for capacity building from the University of Kansas. It advised trainings are sectioned into four stages viz: planning, setup, providing the training and follow-up. For briefness, the planning and setup stages are summarized under preparation for the pilot testing.

7.2 PREPARATION FOR THE PILOT-TESTING

This entails measures taken to ensure the piloting runs successfully. It included obtaining a permit to conduct the training (aside from the ethical clearance obtained earlier for the study) and mobilization of both human and non-human resources for the project Community Tool Box (2017).



7.2.1 Obtaining permission

Before the training, an application to conduct the pilot was put in (Polit and Beck, 2017:311) at the National AIDS/STI Control Programme – an agency under the Ghana Health Service tasked with the implementation of HIV/AIDS programmes and was granted (Appendix 12). The researcher contacted the Volta Regional Health Directorate with the permit from the National AIDS Control Programme and other supporting documents (Appendix 13) requesting permission to hold the two-day training workshop. This was because the directorate must approve of the workshop and also order the healthcare facilities involved to release the HCWs for the training (Sign and Wassenaar, 2016:43; Polit and Beck, 2017:311). Permission was granted and letters inviting the HCWs to the workshop were also received from the directorate and dispatched to the participating facilities for processing and subsequent action. With the help of the Regional HIV Data Manager, the administrators and ART unit facility managers of

the participating facilities were contacted via telephone communication and WhatsApp platforms and notified of the aforementioned letters three days after their dispatch (Sign and Wassenaar, 2016:44). They confirmed receiving the letters and making the necessary preparation to honour the invitation. A day before the training programme, a reminder was sent via the WhatsApp platforms again to remind the participating facilities (Sign and Wassenaar, 2016:44).

7.2.2 Preparation of logistics

The researcher also mobilised the required resources needed for the implementation of the pilot. These include logistics and human resources (Community Tool Box, 2017). The clinical skills laboratory is where the School of Nursing and Midwifery holds its practical sessions. This venue was secured purposely to enable the facilitators to make use of the resources (dummies, beds, etc.) that were available for demonstration. The room which could take 30 students at a time was arranged in the traditional classroom seating style. Four (4) columns and five (5) rows were created with easily movable tablet arm-chair-desks. The trainers had their table in front of the rows and the screen for projecting presentations was behind them and up on the wall (Pavelin *et al.*, 2014:2-3). The projector and the computer were also set.

On the tables of each participant was a file containing a pen, foolscap and plain sheets, and hard copies of the reading materials and handouts on each module. Other teaching and learning resources such as the flip chart, cycle beads, ovulation toolkit, condoms and syringe were also set. The room was adequately lighted and air-conditioners were set for regulation of room temperature. Bottles of drinking water were available. Preparations were also made for the participants to have snack and soft drinks served in the morning as well as lunch. Candies were also available (Community Tool Box, 2017).

7.2.3 Preparation of trainers, observer and participants

Regarding human resource, advanced preparations were made which facilitated recruitment. Two trainers and an observer were recruited three months ahead of the training schedule (I-TECH, 2010:1; Pavelin *et al.*, 2014:2). One of them, a director of nursing services was a participant in the NGT session of the study. They were presented with the training programme and their inputs were useful in organising the training.

The researcher had three meetings with the trainers before the programme took off. During the first meeting, the training programme was discussed and grey areas were clarified. The second session was about a month after the first. The main activity was the sharing of the modules for the presentation and also arrangements for the venue and other such related issues. The last meeting was on the eve of the training programme. The meeting finalised issues as discussed earlier. It was agreed that the training programme outline would be followed strictly to identify any inherent weaknesses for revision (I-TECH, 2010:1; Community Tool Box, 2017; Pavelin *et al.*, 2014:2).

Likewise, the participants were also informed that the programme was being piloted hence they (the participants) were expected to participate in many evaluation activities which would require turning out extensive and truthful feedbacks both written and oral (Community Tool Box, 2017). They were also informed that their feedback would be used to finetune the programme. This explanation was reiterated during the introductory session of the first day. This notice was conveyed to the trainers and observer earlier when they were contracted to facilitate the programme (I-TECH, 2010:1).

7.3 TRAINING PROCEEDINGS – THE INTERVENTION

After an opening prayer, the convener of the training programme (the researcher) welcomed the participants made up of twenty (20) nurses and midwives working at the ART units of the selected health facilities, the observer and the two trainers to the programme (Community Tool Box, 2017). Fifteen (15) of the participants were females, the rest were males.

The researcher expressed appreciation to all who joined the training workshop. The researcher introduced the observer and the two trainers. The other participants also introduced themselves and the healthcare facilities they represented (Community Tool Box, 2017). It was reiterated that the training programme was a pilot-testing project hence their inputs in terms of contributions, questions and suggestions would be solicited through exercises such as pre-and post-training assessments in addition to focus group discussions. They were told that these inputs would be used to finetune and also enrich the programme (I-TECH, 2010:1). To make sure lesson delivery and other activities were conducted in an orderly manner, ground rules were laid down to control participants' behaviour (Community Tool Box, 2017).

They were also taken through the outline of the seven modules of the training programme. A pre-training assessment was done with a questionnaire to assess participants' knowledge, attitude, self-efficacy and interest to provide SC education to WLHIV (I-TECH, 2012:2; Community Tool Box, 2017). The mode of delivery of the programme took the form of face-to-face classroom teaching using lectures, PowerPoint slides, video shows and class activities such as group discussions, demonstrations, repeat demonstrations and role-plays. The lectures with PowerPoint presentations, handouts and films were used to address the information construct of the IMB model. To address the IMB's motivation construct, group discussions, films and role plays were also used. Demonstrations and role plays were also employed to improve objective and perceived self-efficacy and objective skills around the various topics

(Chang *et al*, 2014; Bartholmew *et al* 2016:53). The programme started at 9:00 AM and ended at 6:PM on the first day. On the second day, the programme was facilitated from 8: 00 AM to 5: 00 PM. Modules A to D were covered on the first day of the training and the rest were completed on the second day.

7.4 EVALUATION OF THE INTERVENTION

The evaluation of the intervention resulted in the collection of both quantitative and qualitative data across four different samples. These strata of samples were the two trainers, an observer, HCW trainees and WLHVI who had had SC education after the training programme (Table 7-1 and figure 7-2).

Except for the observer and two trainers, the other three strata of samples were from traditional ART units in the Volta Region that were used in the empirical study. Through the ethical permit and other related documents, the laid down protocols for study site entry within the Ghana Health Service were followed as discussed earlier in chapter three (**3.8.2 Data collection procedure**) to access the health facilities and then the ART units. The ART units which were involved in the training programme were among the original 21 facilities that were engaged in the empirical study. For clarity and prevention of iteration monotony, the researcher has grouped repeating sub-headings across the four strata of samples (see **7.4.1 Cohort recruitment for SCTP evaluation**).

Table 7-1: The various aspects of evaluation done on SCTP

Group	Sampling	Sample size	Type of data	Data collection method	Aspect of the evaluation
HCW trainees	Purposive sampling	20	Quantitative Qualitative	a. Questionnaire b. Written narrative c. FGD	a. Effectiveness of the SCTP in imparting knowledge, attitude and skills. b. Strengths and weaknesses of the programme c. Suggestion for improvement of the SCTP
Trainers	Purposive sampling	2	Qualitative	Written narrative	a. The appropriateness of the SCTP structure for the training HCWs b. the ease and usefulness of the teaching and learning material c. to assess the teaching and learning methods, tools and exercises for flow and synchrony
Observer	Purposive sampling	1	Qualitative	Written narrative	
WLHIV	Purposive Sampling	23	Qualitative	Interviews	The end product of the SCTP, that is, SC education received regarding its importance, usefulness, and recommendations for improvement.



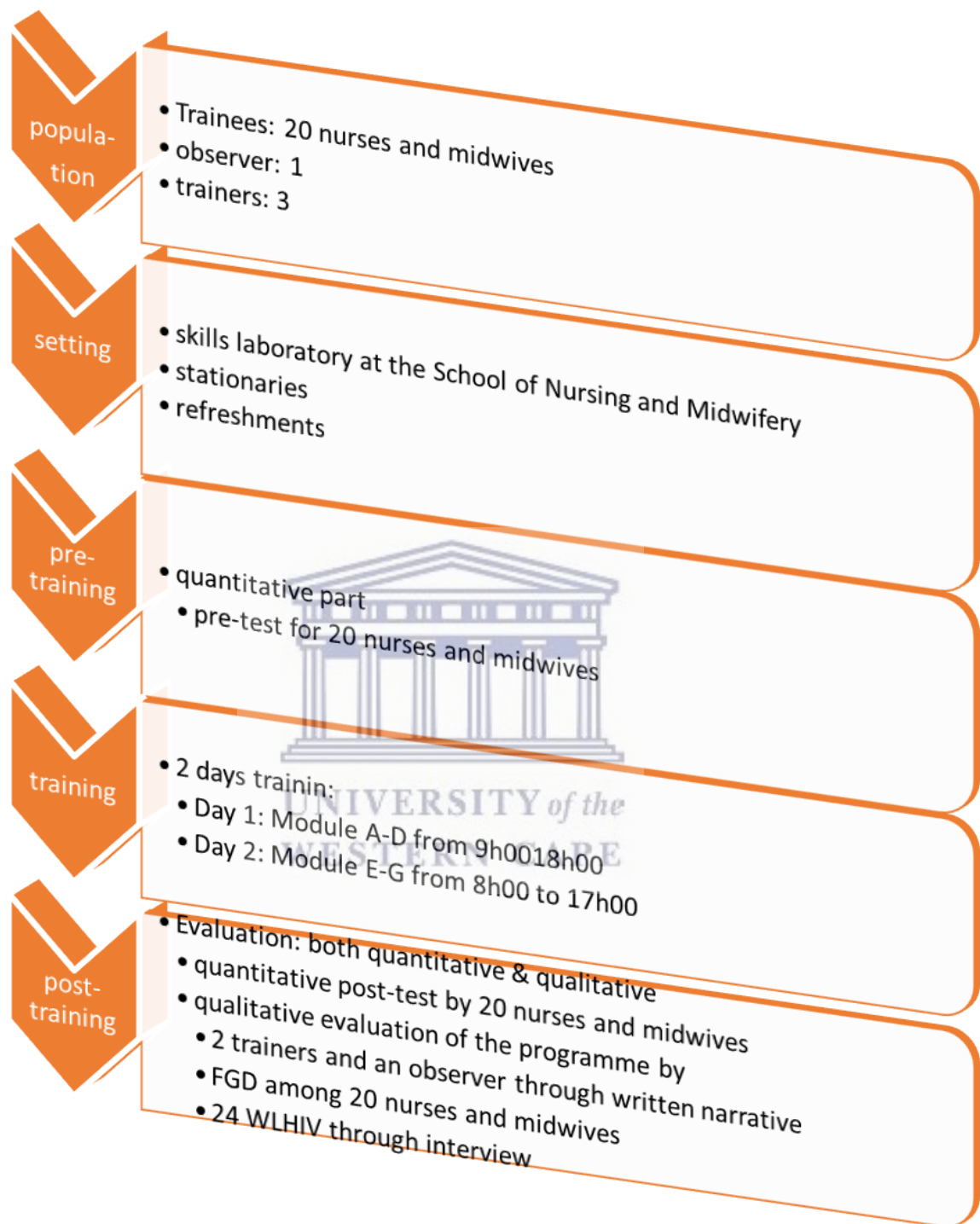


Figure 7-2: Evaluation of the SCTP in a two-day workshop.

7.4.1 Cohort recruitment for the SCTP evaluation

The cohort selection for the pilot of the SCTP is described under the four strata of samples involved viz: HCWs, trainers and an observer and then WLHIV who were exposed to SC education.

7.4.1.1 Healthcare workers

Nurses and midwives and nurse-midwives working at ART units constituted the population of the trainee participants of the SCTP.

7.4.1.1.1 Cohort selection of healthcare workers for the SCTP

As the researcher did not intend to generalise, rather aimed at the generation of the needed data and optimum use of the information thereof, a non-probability sampling technique was chosen. The researcher sought out a sample that was knowledgeable and that could provide adequate answers to the questions of evaluation, hence, purposive sampling technique was applied in the study (I-TECH, 2010:1).

7.4.1.1.2 Inclusion criteria

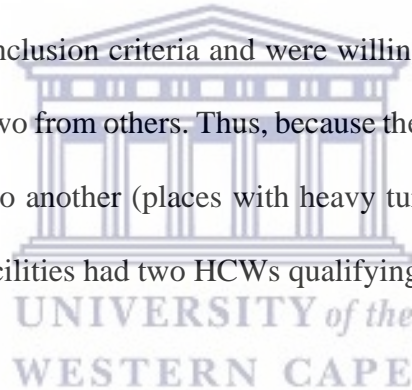
To qualify for inclusion, HCWs (qualified and registered nurses, midwives and nurse-midwives) must have at least six months of experience in the ART unit. He/she must be working in an ART unit that operates on all weekdays (but not only on 'clinic days'). Also, the ART unit must have a patient turnout of at least 10 WLHIV within a month. The HCW must be a regular staff of the health facility and officially placed at the ART unit. This was done with the aim that after the training, the HCW could have adequate attendants (WLHIV) to educate for the researcher to interview. With these criteria, the trained HCW would also be more likely to interact with reproductive-aged WLHIV who need SC education.

7.4.1.1.3 Exclusion criteria

Healthcare workers in the ART units who expressed an inability to conduct SC education for WLHIV after the training programme were left out.

7.4.1.1.4 Sampling procedure

The Regional HIV Data Manager, who collates HIV data for the region was contacted with the training programme. The criteria for cohort selection were discussed with him. Using the regional list of ART units, the 21 facilities that were involved in the study were teased out. Using the inclusion criteria outlined, 15 ART units that fitted were selected. From those units, HCWs who qualified per the inclusion criteria and were willing to participate were selected; one each from some units and two from others. Thus, because the number of HCWs in the ART units varied from one facility to another (places with heavy turnout had two to three HCWs while others had one), some facilities had two HCWs qualifying to participated but others had only one.



7.4.1.2 The trainers and observer

The trainers and the observer constitute two categories of participants who facilitated as well as evaluated the SCTP programme (I-TECH, 2010:1-2).

7.4.1.2.1 Identifying the trainers

During the initial data collection for the first stage of the study project, while the researcher was interacting with the facility managers of the ART units, she enquired about the recent training programmes they had attended and who the facilitators were. The researcher gathered that there were two trainers in the Volta Region. However, when more hands were needed for

training programmes, the numbers were beefed up with staff from Accra, the nation's capital. The researcher took the names and details of those two trainers for further discussions.

7.4.1.2.2 Recruiting the trainers and observer

The researcher contacted the two trainers via telephone and booked appointments with them. They both lived and worked within the Volta Regional capital, Ho. Each of them was visited individually. On her visit to their workplaces, the researcher discussed her research project with them and solicited their help in the development of the SCTP and also in conducting the pilot training programme. They both expressed interest in the study. They however indicated that the programme needed to be approved by Ghana Health Service, after its development, before they could conduct the training. They also informed the researcher of their availability for consultations where necessary. The researcher kept in touch with them through both formal and informal communication. The female trainer, a nurse-manager, was involved in the development of the SCTP.

The two trainers were recruited, formerly, three months ahead of the training schedule (I-TECH, 2010:1). The nurse/midwife was to play the role of an observer while the other handled the training. However, they drew the attention of the researcher to the fact that one trainer could not handle a two-day training programme of such intensity. Hence, an observer was recruited. This observer, a male, was a medical sociologist and educationist. He was a trainer of trainers for *Mama Ye* – a not-for-profit maternal death prevention project in the southern part of the Volta Region for over four years. He had his maters' degree thesis on HIV/AIDS management in the community. Thus, three assessors – two trainers and an observer – were recruited for the two-day training programme.

7.4.1.2.3 Preparation of the trainers and observer for the piloting of SCTP

They were presented with the training programme and their inputs were useful in organising the training. The researcher had three meetings with the trainers and the observer before the programme took off. The meetings were scheduled differently for the two categories of programme assessors (the two trainers and an observer) because they reside in different districts of the Volta Region and could not convene at one place conveniently. However, virtually the same agenda was fulfilled in the meetings with both categories of assessors. During the first meeting, the training programme was discussed and the grey areas identified were clarified. The second session was about a month after the first. As was agreed on in the first meeting, the researcher made hard copies of the training manual developed and delivered them to the two trainers and the observer ahead of the scheduled date.

Two weeks after dispatching the SCTP, the second meeting took place and the contents were discussed. The main activity was the sharing of the modules between the trainers for the presentation and also arrangements for the venue and other such related issues. Questions for clarification were mainly on the natural and artificial SC strategies as well as infertility which were explained. The observer also expressed similar issues at a meeting with him later that same week and clarification were made.

The trainers shared the modules between themselves. The nurse/midwife who was also the Director of Nursing Services (Nurse Manager), took the modules on communication in HIV care, safer sex in the context of procreation, SC strategies, and infertility (Modules B, D, E and F respectively). The other trainer took the rest of the modules which were dignity conserving care, antiretroviral therapy, and HIV status disclosure to a partner – Modules A, C and G respectively. Both trainers expressed they were comfortable with their chosen areas of delivery.

The PowerPoint slides prepared by the researcher were given out to the trainers. The meeting ended with a unanimous decision to meet again before the scheduled dates for the SCTP.

The last meeting was on the eve of the training programme. The meeting finalised issues as discussed earlier. It was agreed that the training programme outline would be followed strictly (I-TECH, 2010:1). The observer also reported in Ho (the suburb for the training) on the eve of the programme. He and the researcher finalised his activities for the following day. Thus, during the two-day training programme, the observer and the trainers discharged their duties as planned. The trainers implemented the SCTP as outlined. The observer's role was to monitor vividly, the implementation of the programme. To achieve this, he was to observe the use of the teaching and learning materials, engagement of the participants with these materials and trainers, and the interaction among the participants. Besides, he was to take note of the examples and experiences that came up in the course of the programme (from both the trainers and the trainees) that were not originally a part of the programme.

He needed to observe the activity sessions and reported ingenuity and lapses of both the facilitators and the participants that may result in the successes or failures in sessions of the programme. These observations were to be fed into the daily debriefing to inform the subsequent session of the programme as well as its revision. These, he was to compile into reports for each day for a future reference towards revising the SCTP. The observer on the other hand followed the programme and presented a detailed report on the happenings of the two days. After the programme, the two trainers and the observer completed a written evaluation of the programme.

7.4.1.3 Safe conception exposed WLHIV

One week after the pilot training session, the researcher followed up on the trained HCWs (who were participants of the SCTP) from 6 of the 15 participating facilities. During the follow-up, the researcher interviewed 23 reproductive-aged (18-49-year-old) WLHIV who attended these facilities for their routine ARV refills and were educated on SC. The purpose of interviewing the WLHIV, the end-users of the training programme developed, was to explore their perspectives of the SC education received regarding its importance, usefulness, and recommendations for improvement

7.4.1.3.1 Population for the study

The target population for the study were WLHIV in their reproductive age (18-49 years old) who were clients at the ART units which were involved in the SCTP training. They must have been on ART for at least six months.

7.4.1.3.2 Sample size and sampling technique

The researcher used data saturation to determine her sample size (Dworkin, 2012:1321). Data saturation was achieved with 23 WLHIV who were purposively sampled. Purposive sampling was adopted because it allowed the researcher to select those WLHIV who were willing to take part in the SC education and then be interviewed (Creswell, 2013:239).

7.4.1.3.3 Recruiting the WLHIV for participation

The trained HCWs were informed during the training session of the researcher's follow-up visit. They were informed that the researcher would have to interview willing reproductive-aged WLHIV after they were educated on SC on their routine visit to the ART units for ARV refill. The HCWs were to communicate to the researcher the schedules that would be

convenient for such activity. It was agreed that the HCWs would consult their registers (both manual and computerised) to determine dates that they were likely to have at least six reproductive-aged WLHIV reporting for a refill. This measure was put in place to ensure that the researcher got some of the women within the target group to interview on her visit. The HCWs opined that though all ART units run all through weekdays, clinic attendance was always heavier at their formerly scheduled clinic days (when the units used to run specific clinic days in a week). Hence, it was suggested that the schedules would be centred around those days. The schedules of appointment were relayed to the researcher within three days after the SCTP training via phone and WhatsApp platforms. The researcher made a working schedule out of those dates and communicated it to the facility managers of the participating ART units through the SCTP WhatsApp platform (created during the training session) as well as through phone calls.

The roles of the HCWs were communicated to them. They needed to identify the reproductive-aged WLHIV and educate them based on the training they had received earlier (as demonstrated in the training session). After the SC education, the women who were willing should be referred to the researcher to be interviewed in privacy as happened in the earlier phase of data collection. As it happened in the earlier phase of data collection, the researcher communicated her need for a room with a table and chairs for the interview. Further, she also assured the HCWs of the anonymity and confidentiality of the women.

It was also agreed between the researcher and the HCWs that the interview would be slotted to take place during the waiting period when clients wait for their turns to collect their refills. After these discussions, the appointments were finalised. As done earlier, the appointments were scheduled for mornings. This being the second round of data collection in those facilities coupled with the fact that the majority of the HCWs who participated in the SCTP were the

facility managers at the ART units facilitated the arrangements. Those who insisted on ethical clearance were served for the second time. Data collection lasted between May and June 2019 covering 6 of the 15 facilities which participated in the training session following the appointment days on the working schedule. These 6 facilities were the ones that, per their facility schedule of activities, were ready to host the researcher between May and June 2019 for the interviews.

Via the WhatsApp platform and phone calls, the facilities were reminded about their appointment with the researcher. On the scheduled day, the researcher reported to the participating facility latest by 8:30 in the morning. This afforded her the time to go through the routines of setting up the interview room to fit her use with available furniture and stationery. She also set up and test her recorder in readiness for use. She was usually introduced to other staff and the clients and the interactions with them facilitated rapport building. The clients were informed the researcher would appreciate a private interaction with some of them who were willing and met her criteria. The researcher then waited at the allotted room (usually the office of the unit manager) for the clients to be referred to her.

The clinic progressed through the routine activities. Registration was done using both electronic and manual registers. Vital signs were also checked for the clients alongside mass or individual health education on SC at the various facilities visited. Where mass SC education was given, the reproductive-aged WLHIV who were willing to participate in the study were met individually by an HCW who had participated in the SCTP. The woman was given a summary of the SC education and allowed to ask questions. It was explained to the researcher that the summary was to ensure the woman understood the health education in preparation for the interview. The woman was also briefed on anonymity and confidentiality. She was then referred to the researcher at the office of the unit manager for the interview.

7.4.2 Quantitative evaluation methods (SCTP evaluation by survey)

Two sets of data were considered under the quantitative evaluation methods. These are the survey data and the written evaluation by the HCWs. The latter (written evaluation data) was qualitative data which was transformed into nominal quantitative data (Srnska and Koeszegi, 2007:35) and then analysed (see Appendix 19).

Only the HCW (trainees) were involved in the survey. The primary objective of this quantitative segment of the evaluation was to determine the effect of the two-day SCTP workshop on ART unit HCWs' knowledge, attitude (motivation), self-efficacy and interest in providing SC services to WLHIV. Specifically, it sought to:

- i. To determine the effect of the SCTP on HCWs' knowledge of SC.
- ii. To determine the effect of the SCTP on HCWs' attitude (motivation) towards SC.
- iii. To determine the effect of the SCTP on HCWs' self-efficacy in providing SC education.
- iv. To determine the effect of the SCTP on HCWs' interest in providing SC education to WLHIV.

7.4.2.1 Survey data collection instrument (HCW)

As shown in Table 7-1, this cohort of HCWs generated three (3) different data sets through a survey, FGD and written narrative by answering the open-ended question. For the survey, the instrument used was the same as the one used for the empirical study as described in section two. As discussed earlier the data collection tool was developed and used in Uganda by Woldetsadik *et al.*, (2015). It was in English. The authors reported face and content validity through expert review and scale mapping unto theory constructs. Internal consistency was established with Cronbach's Alpha of 0.60 - 0.94 (see Appendix 4).

The researcher, by permission from the authors, adapted and used it. Observing the steps outlined by McKenzie *et al.*, (2013:124) the researcher adapted the tool for her study. The adapted version used for this study was in English and had a total of 53 items in five sections lettered Section A to Section E. It covered the major constructs of knowledge, motivation, self-efficacy towards safe conception as well as interest to perform SC education (HIV preventive behaviour) as outlined in the IMB model (Fisher and Fisher, 1992:465).

Section A had a short introduction stating the purpose of the study, a request for consent and space to write the date of the data collection. It also featured 11 socio-demographic items such as age, sex, religion, the cadre of healthcare worker, level of education, place and department of work, years of working experience with HIV clients and whether the HCW has a relative living with HIV. The second section (B) had 10 items on knowledge of SC strategies and related issues. Section C had a total of 12 items; 10 on personal attitudinal factors regarding SC and 2 items on normative factors. Sections D and E having 10 items respectively, followed. The sections focused on HCW interest in providing SC education and reported self-efficacy for the provision of SC education respective. Appendix 4 shows the complete instrument used for the data collection.

7.4.2.2 Survey data collection

In keeping with the anonymity principle, the 20 participants recruited were asked to pick a pseudonym which they would use for the pre-and post-training assessments. These pseudonyms were letters, numerals or a combination of both which could not be used to identify the participants. The essence of the pseudonyms was to match the responses of the pre-and post-training survey for analysis. Before the commencement of the modules of the SCTP, the first set of structured self-administered quantitative data (pre-test) was collected from the 20 participants. Then immediately after completion of the last module on day two, the

structured self-administered post-training quantitative data was collected from the 20 participants. It was a repeat of the pre-test. The participants were reminded to use pseudonyms they chose and used for the pre-test survey. Both pre-and post-tests questionnaires were checked for completeness.

7.4.2.3 Preparation and analysis of the pre- and post-training data

After the data collection, the researcher paired the filled questionnaires using pseudonyms. Using the date on the questionnaires as referenced, the paired questionnaires were arranged such that those of post-test were beneath the pre-test for the 20 responses. The researcher coded the individual questionnaires with a combination of numeral and letters (1a – pre-test and 1b – post-test for the first pair) to make room for easy identification, retracing and reference where necessary. Data was entered into an online coded data capture template created in Google Forms – a survey administration application with a spreadsheet. This was then entered into IBM SPSS (International Business Machine statistical package for social sciences) version 25 for analyses.

Based on the previous analysis (for objective one), the instrument used in this evaluation was tested for convergent, discriminant and construct validity. All multicollinearity assumptions were met. However, reliability for the constructs was tested based on the sample size of the cohort (n=20). The results in Table 7-2 show that all reliability scores computed via Cronbach's alpha were greater than the cut off benchmark of 0.7.

Table 7-2: Reliability test of the instrument based on the cohort size

Construct	Pre-workshop Survey (n=20)		Post-workshop Survey (n=20)	
	Cronbach's Alpha Score	No of Items retained	Cronbach's Alpha Score	No of Items retained
Knowledge (K)	0.759	7	0.814	3
Attitude (M)	0.732	6	0.755	6
Self-efficacy (C)	0.942	7	0.725	2
Interest (I)	0.756	4	0.820	2

7.4.2.4 Analytical tool

Both descriptive and inferential tests run. After the descriptive statistics (such as mean and standard deviation) were obtained from the data, inferential tests were also run. The latter segment of the analysis used the repeated-measures design in which a pair of measures were taken for each participant on the variables involved. To meet the objectives, paired sample t-test was considered a suitable analytical tool. As a parametric procedure, the paired sample t-test used the estimated differences between the two sets of data as the observations for analysis.

To to do this, the following assumptions were applied and tested (Brysaert, 2011:224):

- The dependent variable must be continuous (interval or ratio).
- The observations must be independent of one another.
- The dependent variable should be approximately normally distributed.
- The dependent variable should not contain any outliers.

7.4.2.5 Normality and outliers

Skewness and kurtosis estimates ranging between +1 and -1 are two common measures of normality. The first round of test showed evidence of skewness in the self-efficacy variable. This was further confirmed when real or potential outlier cases were checked for, via plotting

boxplots in SPSS 25. Two outlier cases, showing evidence of weakening the regression line were therefore removed from the cohort leaving a final cohort size of 18 HCWs for further analyses. Since the remaining sample size is still within the range of 10 and 36, the researcher believed that result would not be significantly altered (Isaac and Michael, 1995:101; van Belle, 2002:11; Julious, 2005:291; Johnson and Brooks, 2011:398). Table 7-3, shows the skewness and kurtosis estimates complied with the strict rule of ± 1 , while Figure 7-3 shows that there is evidence of real or potential outlier cases in the cohort across the four variables.

Table 7-3: Normality and descriptive statistics of variables

Variable	N	Mean	Std. Deviation	Skewness	Kurtosis
Knowledge (K)	18	1.75	0.94	0.19	-0.81
Motivation (M)	18	1.00	0.94	-0.08	-0.72
Interest (I)	18	-0.69	1.72	-0.93	-0.10
Self-efficacy (C)	18	1.35	1.13	0.58	-0.84

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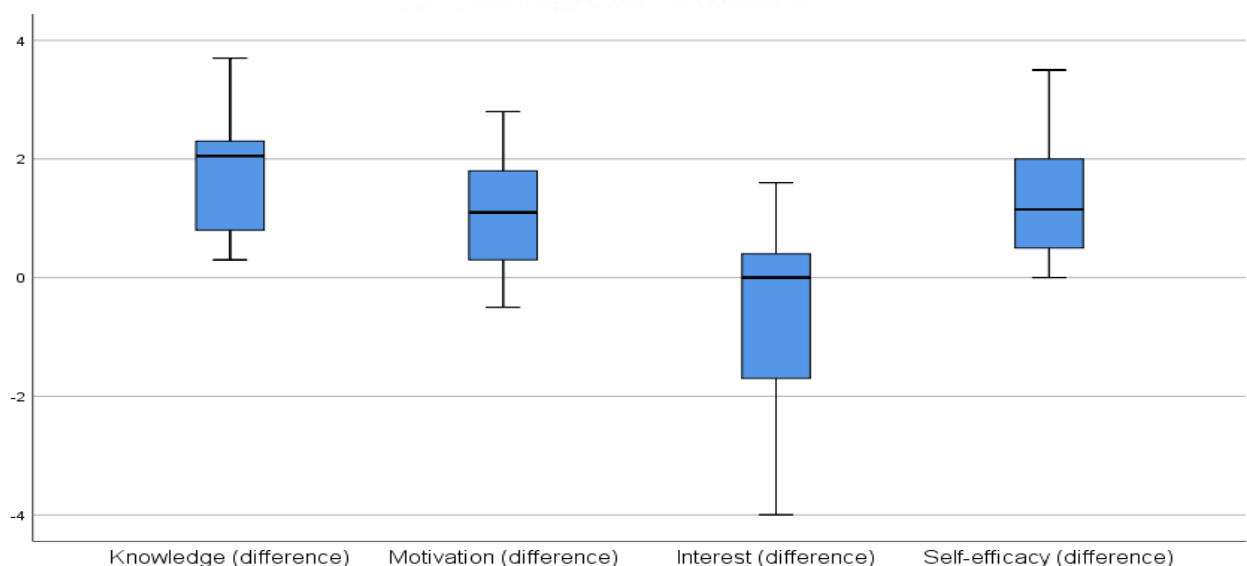


Figure 7-3: Boxplots showing evidence of no outliers in knowledge, attitude (motivation), interest and self-efficacy.

7.4.2.6 Written evaluation of the SCTP by healthcare workers

A cohort of 20 HCWs who participated in the training programme completed a written evaluation of the SCTP. The activity followed immediately after the post-training questionnaire before the FGD to enhance individual assessment, thus, preventing the outcomes of the FGD from having influenced the written evaluation (I-TECH, 2010:3). Cohort selection, inclusion and exclusion criteria, sample size determination and sampling procedure were as discussed earlier (under section **7.5 Quantitative evaluation methods**).

7.4.2.6.1 Written evaluation data collection Instrument

The items on the instrument were formulated using the checklist of the CIPP model (Stufflebeam, 2003:52 – 60) and other sources of literature (I-TECH, 2010b:2). It had three sections lettered A, B and C. Section A centred on the socio-demographic characteristics of the participants such as age, sex, level of education etc. Section B had 12 structured and 4 fill-in items. The fill-in items were extensions that made room for the participants to elaborate on certain chosen options. The structured items were a Likert scale-type with ‘Yes’, ‘No’, ‘Don’t know’ options. The 4 fill-in items required the provision of short responses. Section C had 10 items for the provision of short written answers to the questions posed (I-TECH, 2010b:2 – 7), (see Appendix 14).

7.4.2.6.2 Analysis of the written evaluation data

Data were entered, cleaned and analysed using the Microsoft Excel version 16.18 (2018). A spreadsheet was generated. Rows with identification numbers represented each respondent and columns held the items on the evaluation instrument. For structured items, entries were made directly and simple proportions were calculated. For open-ended items, a separate spreadsheet was created for each question. All responses were entered for each respondent, including

multiple responses. Looking through the responses, common themes were generated to allow for categorization. Hence, the original responses were re-coded. For instance, the first question in Section C (the section that requests for the provision of short written answers) states ‘what are the three most important things learned during this training?’ The participants listed the things learn. Some of the answers were “1 = effective communication, 2 = preconception counselling for discordance/concordant couples, 3 = ART and mode of action”. With recoding, each of the seven modules handled in the training was given a letter of the alphabet; *a - dignity conserving HIV care*, *b - communication* and *c - antiretroviral therapy*. Recoded, the three most important things learnt were about dignity, communication and antiretroviral therapy. After this, simple proportions were calculated. Only descriptive statistics were used in the analysis.

7.4.3 Qualitative evaluation methods

Qualitative evaluation data was collected through written narratives, FGD and interviews from three different sources viz: HCWs, trainers, an observer, and WLHIV (who had had SC education from trained HCWs) as illustrated in Table 7-2.

7.4.3.1 SCTP evaluation by healthcare workers through FGD

The focus group discussion (FGD) was held for HCWs at the end of the two-day training workshop using a semi-structured post-intervention evaluation interview guide. The twenty participants were divided into two groups of ten participants each. The FGDs were moderated by the researcher and her first assistant. The two groups held the discussion sessions simultaneously using the interview guide prepared by the researcher.

The focus group discussion is a qualitative research method that allows for a moderated discussion of deliberately selected issues by persons deemed experienced or knowledgeable on

the subject and in the process generate data (Ochieng *et al.*, 2018:20). FGD sessions held for about 5 to 10 people at a time are geared towards uncovering a range of perspectives but not to reach a consensus. It also has the advantage of covering a wider scope and deeper depth in a short time. It is said to be suitable for exploratory research (Devlin, 2018:214-215). These benefits were gains to the researcher who wanted to explore, from the different perspectives of the HCWs, the strengths and weaknesses of the SCTP and its implementation to enable her to revise the programme. Gathering such information in the shortest possible time was an added advantage. Though a minimum of four meetings is recommended to reach theoretical saturation, the researcher conducted only two due to financial and time constraints.

7.4.3.2 The objective of the FGD

The objective that drove the FGD was to identify the strengths and weaknesses of the SCTP, using the CIPP model, to enable revision of the programme as outlined in the fourth objective. Specifically, the FGD was to gather information from the SCTP participants concerning what they thought could be added, modified or removed from the programme to improve SCTP content (adequacy of modules, sequencing) quality, delivery (venue, approach to delivery, duration). The researcher shared the view that the diverse perspectives that would be generated in the feedback would reveal what needed to be revised in the SCTP

7.4.3.3 Participants of the FGD

Barbour (2007:58) and Ochieng (2018:23) observed that in selecting participants for FGD, emphasis is on ability and capacity to provide insight into the topic under discussion. They suggested that participants be purposively selected. As discussed previously (under **7.4.1.1.1 Cohort selection of healthcare workers for the SCTP**), the researcher adopted a purposive sampling in selecting the 20 participants who were involved in the SCTP.

Regarding the ideal size of an FGD, while Krueger (2002:1); Barbour (2007:60) suggested between 5 to 10 participants; but Ochieng (2018:23); Lewis *et al.* (2014:234); Krueger, (2002:1) argued that a size of 6 – 8 participants is preferred. It is also suggested that a minimum of 3 – 4 sessions are considered normal to effectively exhaust a topic under discussion. However, focus group session may be run until saturation is achieved; thus, no new information emerges (Ochieng *et al.*, 2018:23). Hence, the optimum group size would depend on the complexity of the issues being discussed and the depth of insight required by the researcher (Lewis *et al.*, 2014:243).

All the 20 HCWs who participated in the training programme (as discussed earlier) were involved in the FGD sessions. The researcher believed the group had the right mix of homogeneity and heterogeneity necessary for a meaningful and rich discourse (Lewis *et al.*, 2014:231-232) as they were all nurses and midwives from the ART units of their facilities. They had been introduced to SCTP before the FGD session. However, they had different ranks in the profession with varied level of knowledge and duration of experience in HIV/AIDS care.

7.4.3.4 Preparation for the FGD

It is noted that adequate preparation is needed before the conduct of the FGD regarding the venue and the other logistics needed for convenience, comfort, less interruption and thereby promoting the general success of the data collection (Ochieng, 2018:23; Barbour, 2007:75; Lewis *et al.*, 2014:235). Bearing this in mind, the researcher booked the skill laboratory of the School of Nursing in the University of Health and Allied Sciences located within the premises of the Ho Teaching Hospital (formerly Volta Regional Hospital). This venue is equipped with the necessary facilities for temperature regulation, lighting, logistics for demonstration (dummies, beds and beddings) and other teaching and learning aids such as projectors. More so, it is very accessible and easy to locate. In preparation for the FGD sessions, the seats were

arranged in a circle and the recorder positioned. Preparations were also made for food and refreshment (Barbour, 2007:75).

Just before the start of the sessions, the participants were randomly divided into two equal groups of 10 members each through picking pieces of papers on which were written 1 or 2. All those who picked pieces of papers on which was written 1 grouped into group one likewise those who picked 2. The researcher did this to prevent clustering of HCWs who were acquainted in one group thereby compromising discussions (Lewis *et al.*, 2014:231-232). The discussion in the two groups ran concurrently. As part of the preparation, the two moderators also discussed the items on the topic guide among themselves. This made them conversant with the topic guide and prepared for its use (Barbour, 2007:82).

7.4.3.5 Data collection instrument

A semi-structured topic guide was developed by the researcher for the FGD. The discussion guide was developed to explore the perspectives of the HCWs on the SCTP they have participated in, regarding its importance to them as well as its usefulness, strength and weaknesses as a training tool. It was also used to explore suggestions for revising the programme. Additionally, the FGD also validated the experiences of the participants about the training. Since the evaluation was based on the CIPP model, the items of the FGD topic guide were couched from the checklist of Stufflebeam (2007:3-10) the author of the model. Appendix 15 shows the FGD guide. Other tools that were also used for the data collection were the consent form, tape recorder, pen and notebook for field notes (Kruger, 2001:2).

7.4.3.6 Data collection procedure

Lewis and colleagues' (2014:218) five stages of executing a focus group session was observed for systematic conduct of the procedure and clear orderly reporting. These steps are scene-

setting and ground rules (formulation); individual introduction; stating the opening topic; discussion and ending the discussion.

In setting the scene for the FGD, stage one, it is expected that the participants are given a gist of proceedings; what to expect and the roles they would play (Lewis, *et al.*,2014:218). The participants were given an overview of what to expect at the commencement of the two-day training programme and a reiteration at the start of the FGD session. They were made aware that as part of measures to evaluate the SCTP at the end of the second day, there would be an open but guided discussion where participants would be expected to express their views regarding the strengths and shortfalls of the programme. Thus, the purpose of convening the FGD was to gather information from the participants of the training programme. The participants were to provide information on what they think could be added or removed from the programme to improve its content (adequacy of modules, sequencing, quality, delivery venue, approach to delivery, duration). This was reiterated when it was set for the discussion to begin. They were informed that being a critique of the programme, views expressed would not be rated for correctness, rather, as many constructive criticisms as were possible were welcomed.

The participants were also informed of the need to keep confidential, matters discussed (Lewis, 2014:219; Barbour, 2007:81). They were assured of confidentiality from the researcher. It was also explained that the proceedings would be recorded for accuracy. As part of stage one, some ground rules were established. They included avoiding unnecessary interruptions when others take the floor, avoiding casting aspersions. It was agreed that only one person would talk at a time and loud enough to the hearing of others; therefore, participants needed to ensure that they wait to take turns to make contribution to the discussion. avoiding phone calls was also agreed upon.

Individual introductions were carried out at stage two of the session. This started with the moderator and went around the group. The recording was started. This was done to foster familiarity and establish rapport among participants. That done, stage three was ushered in with an opening topic enquiring of the most appreciated module from the training session (Lewis, 2014:220). It was done to set the tone for the discussion. The question had many participants making their contributions thus made a good opening topic. It livened up the floor for the discussion to flow subsequently. Probing for further explanation from the participants, the items on the discussion guide were introduced one after the other by the moderator, thus, guiding the discussion on the pertinent issues for stage four. Prompts, usually constructed from paraphrasing of the speaker's views, were used to get comments, terms and unclear submission clarified where necessary.

Other questions, not on the discussion guide, were also asked for expatriation (Lewis, 2014:220; Barbour, 2007:83). During the discussion, the moderators worked at reducing dominance and reticence. In an instance, this was done by the moderator thanking the former (overtalkative participant) for her contribution and gesturing to the latter (quiet participant) to express her view.

After exhausting the items on the discussion guide, the moderator brought the session to an end by requesting general suggestions aimed at improving the SCTP. This marked the end of the discussion (i.e., stage five). Participants made their final suggestions which mostly appealed for the SCTP to be absorbed into the mainstream HIV care and manual when it is finally ready. They were thanked and discharged in a courteous manner suggested by Lewis (2014:221). The two sessions of the FGD were held simultaneously in two different rooms to save time as most of the participants must return to their facilities that day. Each group had a moderator who conducted the session and a notetaker who jotted down issues that may affect the interpretation

of the discussion such as non-verbal cues and overt gestures, emotional outbursts and other mannerisms. After the sessions which lasted between 70 to 90 minutes, the two moderators and note-takers met and had a debriefing on the proceedings.

7.4.3.7 Moderator role in data collection

Moderators are needed to run the discussion sessions of a focus group (Polit and Beck, 2017:899). They have the roles that include ensuring the supportive environment necessary for participants to express their personal, multiple and even conflicting viewpoints (Sparkes and Smith, 2018:86). In this study, two ten-member (Sparkes and Smith, 2014:86) focus groups were run simultaneously. Each was facilitated by a moderator and an assistant. The researcher and one of her research assistants were the moderators. To effectively discharge their duties, the moderating team (the two moderators and their assistants) prepared themselves, the venue and the participants. The moderating team had two meetings two weeks apart, delineated their roles and got acquainted with them. The second meeting took place just before the discussion to reaffirm the agreements from the first. They also prepared two rooms for the groups and arranged furniture in a circle. They also set in readiness the audio-recorder, notebooks and other writing materials (Sparkes and Smith, 2014:86).

At the beginning of the discussion, they welcomed the participants to the session, initiated the self-introduction, set the ground rules and presented the topic for discussion (Polit and Beck, 2017:900). The moderators also moderated the discussions using the semi-structured topic guide (Appendix 15). Using the skills of active listening, keen observation and probing, the moderators guided the discussions. They carefully elicited input from every participant and tactfully negotiated to diffuse dominance from the vocal few (Sparkes and Smith, 2014:86). The assistants sat outside the circle of participants, took notes and also operated the audio recorders. The moderators thanked, closed and discharged the participants at the end of the sessions (Sparkes and Smith, 2014:86). Immediately after the discussion, the two moderators

had a debriefing meeting to compare notes on the proceedings from each group in readiness for analysis.

7.4.3.8 Analysis of the data

The post-FGD-debriefing held by the two moderators aimed to resolve any differences. Apart from differences in the duration of the session, no major differences were observed. These activities kept both moderators abreast with proceedings at each of the two FGD sessions thereby facilitating their immersion in the data. The transcription process was started a day after the FGD sessions were held by the research assistant. The research assistant transcribed verbatim audiotaped discussions, which was in English, into a notebook which was faster for him compared to using the computer.

The researcher then typed out the handwritten version of the transcription. Listening to the audiotapes, the researcher went over the typed version of the transcription to ensure both tallied (Barbour, 2007:79). This exercise also enabled editing: single spacing for participants' comments and double spacing between speakers, moderator's questions and comments in bold font, uncompleted statements punctuated with three periods '...' and inferences put in brackets as well as gestures (laughter, long pauses and silence). Speech dysfluencies that were undesirable such as 'ehh... ummm...', were removed. (Krueger, 2015:150). A few omissions noticed such as 'with', and 'were' were inserted and similar mistakes in the form of repetitions were deleted. The transcript was then ready for detailed analysis.

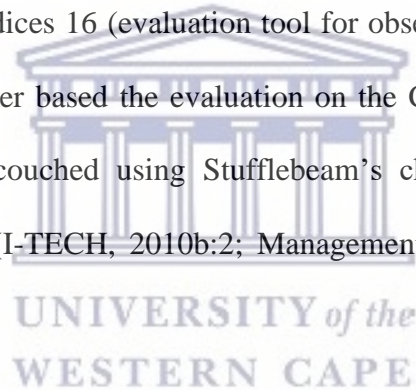
Braun and Clarke's six-phase thematic analysis (2006) was used for the textual data generated from the FGD sessions as detailed earlier (see **Chapter Three** under section **3.9.10 Data analysis**). Since the analysis procedure is virtually the same, its detailed description is strategically omitted here to avoid incessant repetitions.

7.4.4 SCTP evaluation by the observer and trainers through written evaluation

The written evaluation of the SCTP from the perspectives of the two trainers and an observer who conducted the two-day training programme for the HCWs are reported here.

7.4.4.1 Data collection instruments for the trainers and observer

For both categories of assessors, the instrument used had two sections labelled A and B. For trainers, Section A had 14 structured ‘yes’ or ‘no’ items with four fill-in questions. Section B requested a written answer to 8 questions. In the case of the observer, the assessment tool had 9 structured ‘yes’ or ‘no’ items with 3 fill-ins while Section B had 3 items to provide written answers as reflected in Appendices 16 (evaluation tool for observer) and 17 (evaluation tool for trainer). Since the researcher based the evaluation on the CIPP model, the items on the evaluation instruments were couched using Stufflebeam’s checklist (2003:52 – 60) and literature from other sources (I-TECH, 2010b:2; Management Sciences for Health (MSH, 2012:52.16).



7.4.4.2 Analysis of the qualitative data.

The data collected from the two trainers and observer were entered, cleaned and analyzed using Microsoft Excel version 16.18 (2018). In the spreadsheets generated, rows with identification numbers represented each respondent and columns held the items on the evaluation instrument. For structured items, entries were made directly and simple proportions were calculated. For open-ended items, a separate spreadsheet was created for each question. All responses were entered for each respondent, including multiple responses. Looking through the responses, common themes were generated and the original responses were re-coded. After this, simple proportions were calculated. Only descriptive statistics were used in the analysis.

7.4.5 SCTP evaluation by safe conception educated WLHIV through an interview

As stated earlier, the researcher followed up on the trained HCWs (who were participants of the SCTP) by visiting their respective ART units a week after piloting the SCTP. Six (6) of the 15 participating ART units were visited. During the follow-up, the researcher interviewed 23 reproductive-aged (18-49-year-old) WLHIV who attended these facilities for their routine ARV refills and were educated on SC. The purpose of interviewing the WLHIV, the end-users of the training programme developed, was to explore their perspectives of the SC education received regarding its importance, usefulness, and recommendations for improvement. The population for that qualitative study, sample size and sampling technique, accessing the study sites involved and recruiting of the WLHIV for participation are discussed under **7.4.1.3 safe conception exposed WLHIV**.

7.4.5.1 Data collection instrument

The researcher used a printed semi-structured interview guide which had two sections lettered A and B. The A section featured items for collections of the socio-demographic variables of the participant such as personal details like age, level of education, marital status; obstetric history and history of ARV use to enable the description of the general characteristics of the informants. The second section was developed to explore the perspectives of the WLHIV on the SC education they had received concerning its importance, usefulness and also solicit their views to aid in fine-tuning the SCTP. Since the evaluation of the pilot was based on the CIPP model, the items of the interview guide were developed from the checklist of Stufflebeam (2007:3-10) the originator of the model. Appendix 18 shows the interview guide. Also used for the data collection were a tape recorder, pen and notebook for jotting field notes in-between interviewees.

7.4.5.2 Data Collection Process

At the office, the informants were attended to individually. They were ushered to a seat with their back to the door. That made them comfortable knowing that their faces were not seen in case someone inadvertently entered the room. The researcher exchanged pleasantries with each participant to establish rapport and relax the environment. The researcher then introduced herself as a student with a project geared towards developing and improving SCTP for HCWs. The researcher further explained that she needed their views on the SC education they received to improve the training programme which had been developed for HCWs. Further, each of the women was briefed on their rights, especially of withdrawal, confidentiality and anonymity in a language they understood. They were also educated on the need to record the proceedings for enhancing accuracy in representing their views. They were also informed of their right to withdraw from the study at any point in time.

To qualify to be involved in the study, a willing WLHIV should be able to speak one of these three languages which the researcher could interview in: English, Ewe and Twi (Polit and Beck, 2010:129). She should have had a SC education from one of the HCWs who attended the training. She was then guided to sign or thumbprint the consent form giving her consent. Those who refused because they said signing or thumbprinting did not depict 'true' anonymity were allowed to give verbal consent. Then the paper and pencil face-to-face structured survey which captured mainly the socio-demographic characteristics of participants was administered by the researcher. Those who had been on ARVs for at least 6 months and were attempting pregnancy or had expressed the interest in getting pregnant within the next 24 months were then interviewed. Those who did not meet these criteria were thanked for their time and politely discharged while those who qualified were interviewed.

Before the interview commenced, the consenting women were asked if they had participated in a similar programme earlier. Further probing was done to guard against interviewing those WLHIV who might have taken part in the earlier interview which explored their SC needs. Through the self-report of the women, the researcher gathered that none of them had taken part in the earlier study.

Using the guide, each qualified WLHIV was interviewed by the researcher. In situations of inadequate answers, ambiguities or unclear responses, probing questions that were not on the guide but could elicit the desired response were asked. As transcription and immersion were commenced alongside progress with data collection, it was observed that questions needed to be asked on contravening beliefs that could mitigate SC practice and this was done. Interviews lasted between 25 and 55 minutes. They were recorded with an audio recorder. The researcher updated the 'jotted notes' in her field notebook in-between interviewing informants to shed light on some observations that might be important for analysis like extreme anxiety, disability, debility and discomfort or irritation with the topic under discussion. Interviews were conducted between 9:00 AM to 4:00 PM over a period of 2 months in the 6 facilities. After saturation was reached with the 23 informants, no new interviews were conducted.

7.4.5.3 Data Analysis

Both quantitative and qualitative data were generated from Sections A and B of the data collection instruments respectively which were analysed separately. For the quantitative data, a spreadsheet was generated in Microsoft Excel for Mac 2019, version 16.28 for analysis. The individual responses (hardcopies) were checked for completeness and then entered into the excel sheet. A duplicate was created and used for the analysis. The data in excel was scanned through for incorrect and unwanted entries. The data was also tallied to ensure their summation

equalled the individual entries. After that cleaning exercise, a simple proportion was used to analyse the data.

The qualitative segment of the data was analysed using the thematic analysis as explained by Braun and Clarke (2006). The analysis was carried out following the six phases discussed by the authors (see section **3.10.9.1 Data Analysis** under Chapter Three). The description is left out of this section to avoid repetition, as the steps involved were the same except that four a priori themes deduced from the four components of the CIPP model were used. Based on the aim of the interview, which was to explore the perspectives of WLHIV on the SCE they received regarding its importance, usefulness, and recommendations for improvement, the data was interpreted. This objective was derived from the fourth objective of the study project which was to refine the training programme developed.

7.5 CHAPTER SUMMARY

In this chapter, the piloting of the SCTP was discussed. The programme was pretested to determine its feasibility, acceptability and effectiveness as a SC training tool for HCWs. The CIPP model was used to enable a comprehensive evaluation of the SCTP. Thus, the programme was evaluated based on context, input, process and product. The evaluation was carried out across four strata of the population. These were trainers, observer, HCWs and WLHIV who were educated on SC. Through interviewing, FGD, written narrative and a survey using a structured questionnaire, both quantitative and qualitative data were collected. The results as well as the discussion of findings are presented in chapters eight and nine.

CHAPTER EIGHT: RESULTS FROM THE SCTP PILOTING

8.1 INTRODUCTION

This is the second chapter under section four. It features the results of the quantitative evaluation data collected and analysed during the piloting of the SCTP. Both the descriptive and inferential statistical analysis were performed and the results are presented as follows.

8.2 DEMOGRAPHIC CHARACTERISTICS OF THE SURVEY PARTICIPANTS

This is part of the descriptive statistics that was obtained from the cohort of 20 HCWs before the inferential tests were run on the 18 (see section 7.4.2.5 – Normality and outliers for further explanation). Table 8-1 shows that of the cohort of 20 HCWs, only 4 (20%) were males. The mean age of participants was 33.33 with 75% of the cohort having a mean age of 34.5 years. This is quite similar to the mean age of 34.07 years obtained in the main study during needs-assessment with a cumulative of about 81% of the participants falling between ages 20 and 39. In terms of working in an ART unit, the HCWs on average had only 3.33 years of experience. The proportion of those who either hold a diploma (n=9, 50%) or a degree (n=4, 22%) show that on average, the HCWs hold significant educational qualifications as professionals. This is in tangent with the fact that 72% were registered, nurses/midwives.

Table 8-1: Demographics description of the study participants

Variable	Number	Percentage
Number of participants (n)	20	100%
<i>Age group</i>		
≤ 29	3	15
30 – 49	15	75
50 - 60	2	10
<i>Gender</i>		
Male	04	20
Female	16	80
<i>Relative/Friend living with HIV</i>		
Yes	07	35
No	13	65

Variable	Number	Percentage
<i>Religion</i>		
Christianity	20	100
<i>Marital Status</i>		
Single	07	35
Married	13	65
<i>Category of HCW</i>		
Auxiliary Nurse/ Midwife	05	25
Registered Nurse/ Midwife	15	75
<i>Education (Highest Education)</i>		
Certificate	05	25
Diploma	11	55
First degree	04	20

8.2.1 Descriptive statistics

From Table 8-2, the composite mean scores of the HCWs before the training intervention were 3.25, 3.16, 3.53 and 4.37 for SC knowledge, attitude, self-efficacy and interest towards SC education respectively. Post the training intervention, the composite mean scores across all of the four constructs increased as follows: 4.67, 4.11, 4.63 for SC knowledge, attitude and self-efficacy for SC education respectively, except for interest which declined (3.65). The changes are reflected in the respective composite mean change is as tabulated in Table 8-2.

There is generally a positive mean change for each of the items of the four constructs under consideration (knowledge, attitude, self-efficacy and interest) except for M6, I6 and I7. All items were found to have mean scores above average post-training which was not so before the training (see Table 8-2). Altogether, these findings indicate a general improvement in the constructs post-training.

Table 8-2 Pre- and post-training means of items of knowledge, attitude, self-efficacy and interest with their corresponding mean change

SC knowledge (n=20)				Attitude towards SC education (n=20)				SC education self-efficacy (n=20)				SC education interest (n=20)			
Item	PrTK Mean	PoTK Mean	Mean Change	Item	PrTA Mean	PoTA Mean	Mean Change	Item	PrTC Mean	PoTC Mean	Mean Change	Item	PrTI Mean	PoTI Mean	Mean Change
K1	3.80	4.60	0.80	M1	1.85	2.90	1.05	C1	2.80	4.15	1.35	I1	3.05	3.35	0.30
K2	4.40	4.70	0.30	M2	4.50	4.65	0.15	C2	3.85	4.95	1.10	I2	4.25	4.85	0.60
K3	2.35	5.00	2.65	M3	2.80	5.00	2.20	C3	2.35	4.95	2.60	I3	3.70	5.00	1.30
K4	3.50	4.70	1.20	M4	4.25	4.60	0.35	C4	2.60	4.65	2.05	I4	4.35	4.95	0.60
K5	2.65	4.70	2.05	M5	4.25	4.80	0.55	C5	2.75	4.60	1.85	I5	4.15	4.45	0.30
K6	4.05	4.70	0.65	M6	4.90	4.75	-0.15	C6	4.05	4.95	0.90	I6	4.75	4.50	-0.25
K7	2.90	4.40	1.50	M7	2.90	3.65	0.75	C7	2.95	4.85	1.90	I7	4.25	3.95	-0.30
K8	3.95	4.90	0.95	M8	4.70	4.90	0.20	C8	3.65	5.00	1.35	I8	4.60	4.85	0.25
K9	3.05	4.95	1.90	M9	3.50	4.35	0.85	C9	3.05	4.85	1.80	I9	4.15	4.95	0.80
K10	3.70	4.85	1.15	M10	3.20	4.35	1.15	C10	3.30	4.90	1.60	I10	4.65	4.85	0.20
x	x	x	x	M11	4.85	5.00	0.15	x	x	x	x	x	x	x	x
x	x	x	x	M12	4.90	4.95	0.05	x	x	x	x	x	x	x	x
Composite score	3.25	4.67	1.43	Composite score	3.16	4.11	0.95	Composite score	3.53	4.625	1.10	Composite score	4.37	3.65	-0.72

PrTK – pre-training knowledge; PoTK – post-training knowledge; PrTA – pre-training attitude; PoTA – post-training attitude; PrTC – pre-training self-efficacy; PoTC – post-training self-efficacy; PrTI – pre-training interest; PoTI – post-training interest.

Item 1 – child adoption, item 2 – TUI, item 3 – TVI, item 4 – assisted reproduction, item 5 – assisted reproduction facility, item 6 – ART, item 7 – PrEP, item 8 – STIs, item 9 – VMMC, item 10 – infertility such that KI – knowledge on child adoption, M1 – attitude towards adoption, C1 – self-efficacy towards education on child adoption, I1 – interest in educating on child adoption etc.

Taken individually across all the four constructs, troughs are observed for items 3, 7 and 9 of knowledge (K3, K7, K9), attitude (M3, M7, M9), self-efficacy (C3, C7, C9) and interest (I3, I7, I9). Thus, across all four constructs, HCWs exhibited poor knowledge, attitude, self-efficacy and interest regarding TVI - timed vaginal self-insemination, PrEP - pre-exposure prophylaxis, and VMMC – voluntary male medical circumcision both in the main and the pre-test survey (see Figures 8-1, 8-2, 8-3, 8-4). These were very pronounced for knowledge items especially, followed by those of attitude, reflecting below-average levels observed in the main survey during the needs-assessment (graph of the main survey included in the figures for comparison).

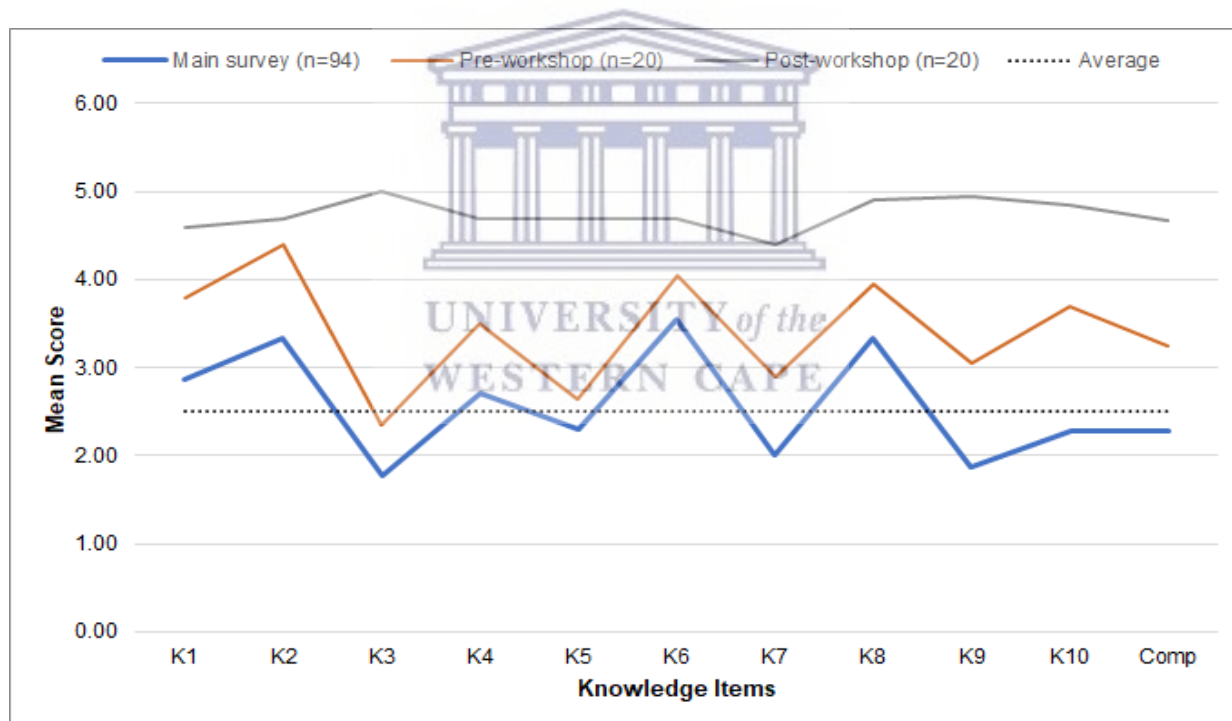


Figure 8-1: A line graph comparing the main survey with pre- and post-training knowledge of safe conception.

K1 – child adoption, K2 – TUI, K3 – TVI, K4 – assisted reproduction, K5 – assisted reproduction facility, K6 – ART, K7 – PrEP, K8 – STIs, K9 – VMMC, K10 – infertility

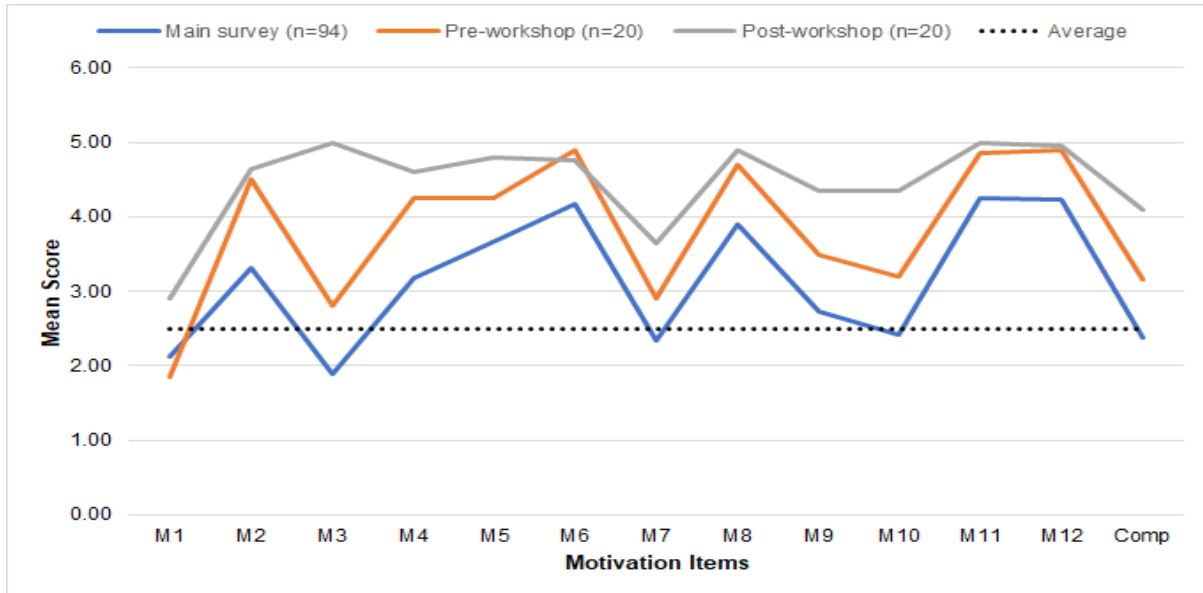


Figure 8-2: A line graph comparing the main survey with pre- and post-training attitude towards safe conception education.

M1 – child adoption, M2 – TUI, M3 – TVI, M4 – assisted reproduction, M5 – assisted reproduction facility, M6 – ART, M7 – PrEP, M8 – STIs, M9 – VMMC, M10 – infertility, M11- colleague endorse SC, M12 – Managers endorse SC

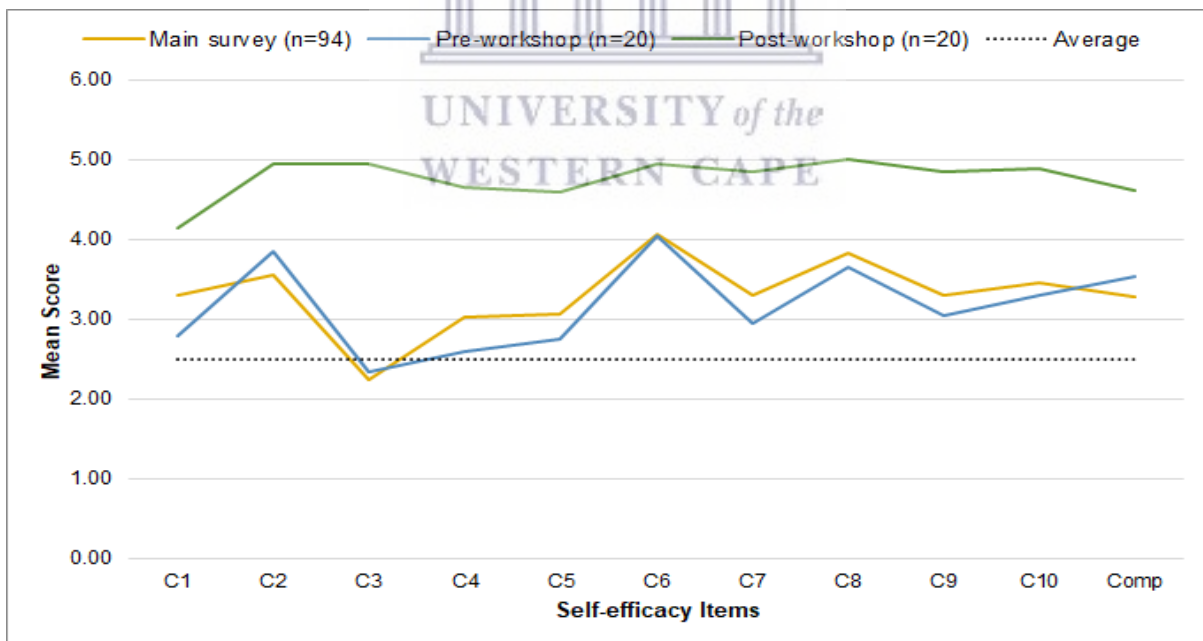


Figure 8-3: A line graph comparing the main survey with pre- and post-training attitude towards safe conception education.

C1 – child adoption, C2 – TUI, C3 – TVI, C4 – assisted reproduction, C5 – assisted reproduction facility, C6 – ART, C7 – PrEP, C8 – STIs, C9 – VMMC, C10 – infertility

Before the training, there were below average mean scores for K3 (knowledge of TVI), K7 (knowledge of PrEP) and K9 (VMMC) as SC strategies. Besides, K5 (knowledge of facilities for assisted reproduction) and K10 (knowledge of the synergic effect of infertility on HIV transmission/acquisition) were also below average. Comparatively, there is an improvement, generally, in knowledge gain across all the knowledge items post-training with no troughs (see Figure 8-1). The same applies to self-efficacy items (8.3). Though there is some improvement across almost all the items of motivation and interest, the troughs are still observed with item 7 for both constructs. It is important to note that across all constructs of knowledge, attitude, self-efficacy and interest, TVI has improved so remarkably that all the troughs have peaked (see Figures 8-1, 8-2, 8-3, 8-4).

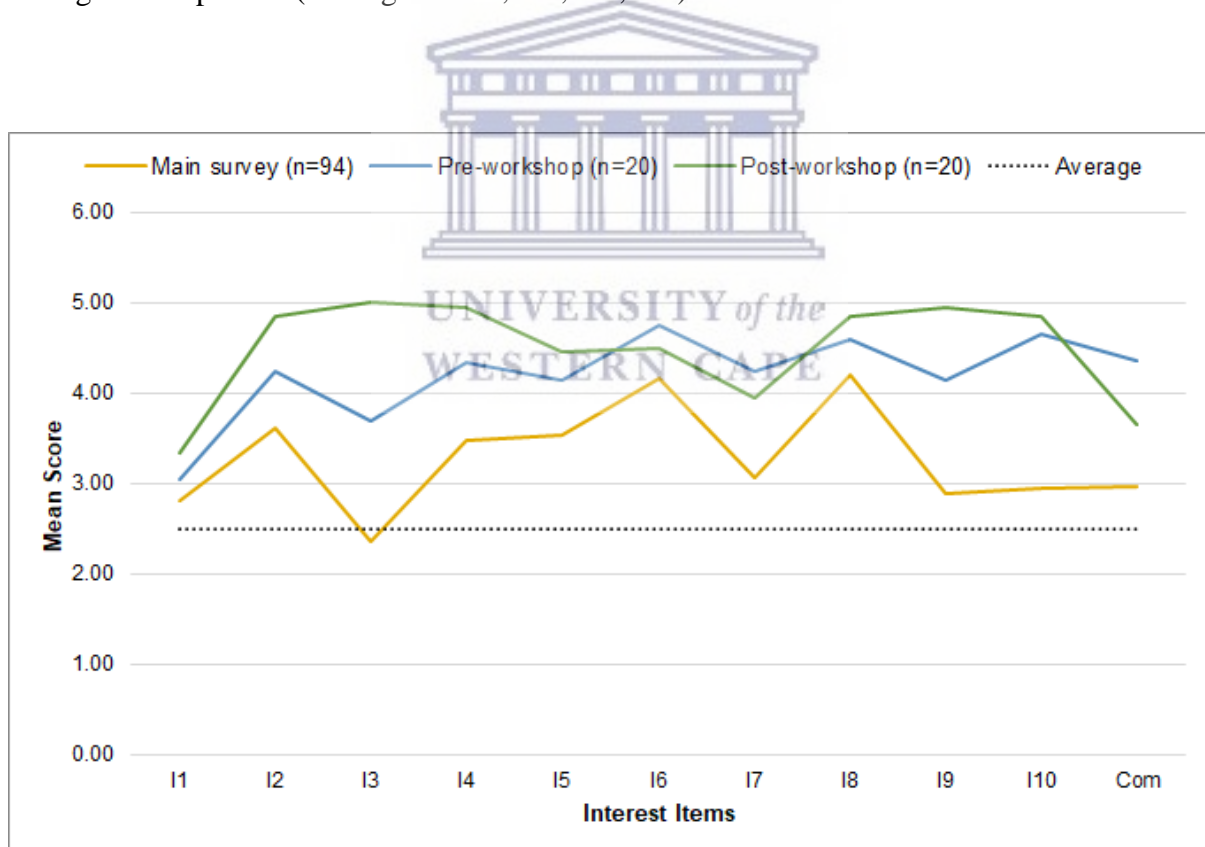


Figure 8-4: A line graph comparing main survey with pre- and post-training SC education interest towards safe conception education.

I1 – child adoption, I2 – TUI, I3 – TVI, I4 – assisted reproduction, I5 – assisted reproduction facility, I6 – ART, I7 – PrEP, I8 – STIs, I9 – VMMC, I10 – infertility

8.2.2 Results of the paired sample t-test

To satisfy the conditions for running paired t-test, outliers were tested for. Two outlier cases with evidence of weakening the regression line were removed and a final cohort size of 18 participants was used (see **sub-heading 7.4.2.5 Normality and outliers**). The paired sample t-test analysis was done via SPSS version 25 and the results are summarised in Tables 8.3 and 8. 4. From Table 8-3, the pre- and post-intervention composite means for three of the four constructs (knowledge, attitude and self-efficacy towards SC) showed an increase post-intervention; but a reverse of the trend is observed for interest in SC education. Details of this observation is shown in Table 8-4 as the mean difference across the four constructs pre- and post-intervention.

Table 8-3 descriptive statistics of knowledge, attitude, self-efficacy and interest pre- and post-intervention

Statistics	Knowledge		Motivation		Interest		Self-efficacy	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
N	18	18	18	18	18	18	18	18
Mean	3.16	4.91	3.10	4.12	4.39	3.69	3.46	4.78
Median	2.95	5.00	3.00	4.30	4.60	4.50	3.80	5.00
Std. Deviation	0.94	0.19	0.82	0.95	0.63	1.63	1.27	0.39
Range	3.4	0.7	2.5	2.8	1.6	4.0	3.5	1.0
Minimum	1.3	4.3	1.8	2.2	3.4	1.0	1.5	4.0
Maximum	4.7	5.0	4.3	5.0	5.0	5.0	5.0	5.0

Table 8-4 Mean difference of knowledge, attitude, self-efficacy and interest

Variables	Mean difference	95% Confidence Interval of the Difference		t	df	p
		Lower	Upper			
Difference in Knowledge (K)	1.750	1.278	2.222	7.820	17	0.000*
Difference in Motivation (M)	1.017	0.551	1.483	4.603	17	0.000*
Difference in Interest (I)	-0.694	-1.550	0.161	-1.712	17	0.105
Difference in Self-efficacy (C)	1.317	0.755	1.878	4.946	17	0.000*

* $p=0.000$ means that $p<0.0$

From the results, the mean difference of 1.750 with $t=7.820$, $df=17$ at 95% CI = (1.278, 2.222) shows an increase in HCWs' knowledge of SC education and this was found to be significant at $p<0.001$. Similarly, the mean difference of 1.017 with $t=4.603$, $df=17$ at 95% CI = (0.551, 1.483) shows an increase in HCWs' motivation for SC education and this was also found to be significant at $p<0.001$. The mean difference of 1.317 with $t=4.946$, $df=17$ at 95% CI = (0.755, 1.878) shows an increase in HCWs' self-efficacy for SC education and this was also found to be significant at $p<0.001$. On the contrary, the mean difference of -0.694 with $t= -1.712$, $df=17$ at 95% CI = (-1.550, 0.161) shows a decrease in HCWs' interest in providing SC education to WLHIV although not significant at $p=0.105$.

8.3 CHAPTER SUMMARY

In this chapter, the second of section four, the results of the quantitative data collected from HCWs during the piloting of the SCTP was presented. Prior to the training intervention, it was observed that HCWs generally had poor knowledge, attitude (motivation), self-efficacy towards SC as well as low interest in SC education. This finding was similar to the results of

the main survey which was conducted during the needs assessment stage. Of all the SC strategies, HCWs had the least knowledge about timed vaginal self-insemination (TVI).

After the training intervention, a positive mean change was observed across the constructs except for self-efficacy. Notable was the high mean change observed in knowledge, attitude (motivation), self-efficacy towards TVI as well as interest towards its (TVI) education to WLHIV. Generally, the quantitative results show improvement in the constructs after the training programme. The qualitative findings are presented in chapter nine.



CHAPTER NINE: FINDINGS AND DISCUSSIONS FROM THE SCTP PILOTING

9.1 INTRODUCTION

This chapter is the third under section four. It unfolds the findings of the qualitative segment of the piloting carried out on the SCTP developed in section three. The evaluation data was collected from multiple sources using different methods viz: HCW trainees (FGD and written narrative), trainers and an observer (written narrative) as well as WLHIV from ART units of selected health facilities (interviews).

9.2 RESULTS FROM THE FGD WITH HCWs

Following are the findings from the two concurrently held focus group discussion sessions

9.3 DEMOGRAPHIC CHARACTERISTICS OF HCWS IN THE FGD

As outlined earlier (**8.2 Demographic characteristics of the survey participants**), a cohort of 20 HCWs participated in the two-day training workshop. Thus, apart from the survey, the cohort also evaluated the SCTP through FGD and written narrative.

9.3.1 Results from the FGD data

The CIPP model was employed for the evaluation, hence, the themes were induced around its four components (context, input, process and output). For each theme from the CIPP domain, there are at least two sub-themes as shown in Table 9-1.

Table 9-1: Themes and sub-themes from the FGD analysis

Themes	Sub-themes
Evaluation of the SCTP in context	Usefulness/needfulness of the SCTP/SCE
	Proposed beneficiaries of the SCTP
	Proposed beneficiaries of the safe conception education (SCE)
SCTP input evaluation	Effectiveness of the SCTP modules
	Adequacy and effectiveness of the human resource
	Suitability of the training venue and other amenities
SCTP implementation process evaluation	Programme delivery
	Comprehensibility of the modules
Evaluation of the SCTP as a product	Impression with SCTP
	Conflicting professional ideologies

9.3.2 Evaluation of the SCTP in context

In the formative stage, as is the case of the current pre-test study, context evaluation guides to determine whether an intervention is needed. This is done through assessment of needs, problems that the intervention addresses and opportunities or its use. This evaluation is also to determine if the programme was found beneficial then its usefulness to the HCWs in the discharge of HIV care to their clients.

9.3.2.1 Usefulness/needfulness of the SCTP/SCE

From the analysis, the researcher discovered that most of the HCWs identified SCTP as an important intervention. All the trainees (HCWs) indicated that they found the programme useful and endorsed it. In its absence, HCWs faced challenges in addressing the reproductive needs of their clients. Some of the trainees stated that they were recruited into the ART units with very little or no knowledge on SC education which posed problems to them in rendering

holistic reproductive health care to their clientele. One of the HCWs expressed this concisely in the excerpt that follows.

“The training programme has ... been a timely one for some of us. Because like my sister (a fellow participant) said, for some time ago (up till now), some of us were just doing it all from what we have, thinking that people living with HIV cannot have children. So, most of the clients come out to ask this question and it is like you close your mind because you do not know what to tell them. But this one (SCTP) has been a timely training for some of us, which has given us full confidence that we can stand on a bigger or larger platform to educate a lot of people about it, so it is very good training.” P7 FGD 1

9.3.2.2 Proposed beneficiaries of the SCTP

Diverse categories of beneficiaries were proposed. Most of the participants were of the view that the training should be extended to other cadres of staff working in the healthcare facilities such as physicians, physician assistants, pharmacist, HIV data managers and others. Persons leading alternative medicine services such as leaders of faith-based institutions and allied groups in the fight against HIV such as, teachers and none-governmental organizations (NGOs) were also suggested as persons who should benefit from the training programme. It was opined that with adequate training, these categories of persons can help educate persons living with HIV on SC.

“I am of the view that specifically, medical officers also need to be trained with this (SCTP) because it would interest you to know that some of them have no idea about it – that people living with HIV can become pregnant or give birth safely; and the way to even go about it (the SC education) some of them have no idea. So, the medical officers, physician assistants and all other categories of health workers who consult with clients (living with HIV) need to know about this (SC), so in case any client or anyone living with HIV comes their way, they would be

able to have that confidence to be educating them or referring them to the appropriate counselling centres.” P3 FGD 1

9.3.2.3 Proposed beneficiaries of the safe conception education (SCE)

Further, HCWs were also with the view that apart from WLHIV, provision should be made for men living with HIV to also be educated on SC. It was also opined that couple education should be better since some of the SC strategies can only be practised with a concerted effort from both parties.

“What I think is that, with conception, it is not only with the woman. It is two parties that are involved. So, if we are training the women alone or we are talking to the women alone, I think... I think the partners should be brought on board so that they all receive this education/training. And then if a decision is supposed to be made, they can take that decision together....” P3 FGD 2

9.3.3 SCTP input evaluation

Input evaluation assesses alternative approaches, strategies, plans and budgets for a programme for their feasibility and usefulness (Stufflebeam, 2003:3). Thus, an evaluation of the inputs needed or used to implement the programme. According to International Training and Education Centre for Health (I-TECH, 2010:1), to be successful, a training programme needs knowledgeable and competent trainers, training participants with baseline knowledge, and a well-structured module as core inputs. In this FGD, the researcher aimed at evaluating the quality of the SC module developed through the participants' appraisal. Specifically, the researcher had to evaluate the SCTP's approach, work plan and schedule for sufficiency, sequence and flow from the perspective of the HCWs. This entails assessing the appropriateness of programme content (modules); teaching and learning methods and resources; programme delivery strategies; timing and general effectiveness of the programme from the perspective of the HCWs who are the intended end-users.

9.3.3.1 Effectiveness of the modules

The sub-themes under input evaluation include the *effectiveness of the module and materials*. This embraced adequacy and sequencing of the component topics and resource materials, duration of running the modules and module delivery strategies. The majority of the participants expressed that the adequacy and sequencing of the topics and resource materials were satisfactory, and needed no add-on. However, others were of the view that some topics could be added hence suggested counselling and post-natal care of mother and baby.

“I would say, with the training, it is on point. We have the videos, aside from the lecture, group discussions too. With the video and everything, even the manuals (reading materials) we have in our files, and you gave us a lot of information.”

PI FGD1

“I think they should add how to do the counselling because some of us before we went to the ART units, we were not given much training; some of us went there and we learned on the job. So, it is like what we know is what we are doing. But we do not know whether we are doing it well (or not). So, the counselling aspect, we are just doing it from our minds; so, if they can add the counselling and how to do the adherence counselling better, maybe there is a way to do it that we are not doing it that way.” **PI FGD 2**

“Also, I also want to add that since we are talking about conception, after conception, there is delivery. So, after delivery or when you deliver, I think we should add that information too to the manual – in the sense that after delivery, what happens? Though we might know since this is coming as a manual, I think it should be added. So that we know that when you deliver, this is what happens to the child and the mother. That is what I think.” **PI FGD 1**

However, some of the participants think they needed some other types of audio-visuals purposely made to facilitate the education of their clients at the health facilities. Some suggested this should be in the form of flip charts.

“I would think going back to our facilities to start with, we might need flip charts for our clients to get the understanding more. Maybe using the calendar, the beads we had, using the chart, the home insemination, the picture we had here on the screen, if we have that (these) as a chart, the client you have counselled would have a pictorial idea of what he/she is going through (the lessons). So, may be with the training, going home from today, we should have the chat and the manual we are going to work with.” P4 FGD 1

Concerning the duration of the training, almost all of the participants felt the two days were insufficient, and suggested it should be run for three or four days. They believe the programme would be more beneficial and learning improved with the longer duration. Some expressed they felt they were too stressed and the programme was too packed for their liking.

“For me, the duration is too short. Instead of the two days, I think it can be extended to three or four days so that we can be able to assimilate whatever we are being taught.” P1 FGD 1

9.3.3.2 Adequacy and effectiveness of the human resource

This bears on the adequacy, competency and effectiveness of trainers. The participants expressed much satisfaction with the trainers. They described the trainers as experts who were very experienced in their field of work.

“I also want to congratulate the facilitators because (using) their experiences, they gave us ‘live’ experiences (real-life situations) and we also learnt eh... new things from those experiences.” P3 FGD 2

9.3.3.3 Suitability of training venue and other amenities

This theme describes the venue of the training and other related physical logistics provided for the running of the programme. Some of the participants found them adequate and effective while others thought otherwise. Others also thought the programme should be run at their health facilities and not away from it. Others also thought an event of that nature should house the

participants to avoid delays in conducting the programme, and hence see the absence of accommodation as a weakness of the programme.

“I think the environment (for the training programme) ... The place should be bigger than this, I mean the space or room is crowded.” P2 FGD 1

“I think next time, the participants should be housed or they should be given residence because you see that yesterday because we were coming from different places, it delayed the programme. But if like we were all accommodated, that delay shouldn't have occurred.” P1 FGD 2

9.3.4 Evaluation of the implementation process of the SCTP

Process evaluation bears on the running of the training programme and the teaching and learning processes employed thus the module delivery strategies. It is an implementation stage at which inputs should be used effectively to achieve the desired goals and objectives of the product (Stufflebeam, 2003:3). Evaluation of this domain should identify defects in the procedural designs or its implementation. It determines whether teaching and learning methods were effective or not, procedural barriers and needs for adjustments (Zhang, *et al.*, 2011:59).

9.3.4.1 Programme delivery

During the focus group evaluation of the programme, the majority of the participants expressed the view that the teaching and learning strategies used in delivering the SCTP were good. They explained that aside from employing a variety of suitable delivery methods which enhanced the learning process, they were also able to learn in a relaxed manner. Despite a chorus of “on point” regarding the delivery of the SCTP materials, one participant had a divergent view of the mode of delivery. She indicated that she would have appreciated more demonstrations.

“I would even want to congratulate the facilitators that they have done very well. This is one of the training or workshops of its kind that I am relaxed, I laughed,

nobody controlled (intimidate) me not to laugh and the laughing too is like a learning process; it brings issues that are so related to the workshop. You realised that there are experienced people who are taking us through (the training). So, the trainers, the facilitators, their delivery of points, I would give them 100%. Everything was just perfect.” P3 FGD 1

“Nonetheless, even though the delivery was 100% (good), there were times that they (trainers) allowed the participants to take them outside the topics that they were discussing, bringing other issues which take much of our time.” P5 FGD 1

“We are in a skills laboratory, so, I was expecting a demonstration. The deliveries were more theoretical/lecture-based than practical. So, I am suggesting a more practical demonstration the next time.” P4 FGD 2

9.3.4.2 Comprehensibility of the SCTP

Regarding the quality of being understood, the trainees expressed that the inputs and the mode of delivery altogether made the programme very comprehensible. All the trainees indicated that they had adequate and clear information from the teaching and learning interaction and handouts to consult afterwards. Some indicated that they have adequate comprehension not only to guide their clients but also to take their colleagues health personnel in their various facilities through the programme.

“Most at times when our clients, especially the young ones, those in their fertile age, the women, and even the men, some of them you realise that what makes them cry and what makes them not to adhere to the treatment is because they realise that they cannot give birth with this condition; they are like useless. But this training has given me a whole lot of confidence to stand to educate and tell them that life is never ended with this condition (HIV/AIDS). With this condition (HIV/AIDS), there is a better way of procreation, there is a safer way of doing it, so they should come. So, this would make them..., by so doing, it would enable me to counsel them very well on how to take their ARVs very well, so by so doing it minimises their chances of transmission and giving it to probably their

offspring if they want to procreate. So, it (the training) has equipped me very much to go and confidently talk even I can face medical officers and explain everything in detail to them.” P1 FGD 2

9.3.5 Evaluation of the SCTP’s product

Evaluation of the product includes an appraisal of the outcomes of the training programme which are the knowledge and skills acquired and attitude change. Zhang et al. (2011:59) opined that product evaluation ‘measures, interprets and judges’ what is the worth of the inputs and how it meets the identified needs.

9.3.5.1 Impression with the SCTP

Most of them revealed that the training programme had equipped them with the necessary knowledge and confidence they did not have earlier, not just on SC, but also on other HIV related issues important for HIV care such as dealing with stigma. With these, they reckoned that they would be able to help their clients with issues of procreation, and other such related cases regarding the subject matter. The participants highlighted that they are better placed to educate other staff on the subject, and this is a positive outcome of the programme, as continuity and sustainability are envisaged by the participants.

“This programme has been very helpful because first, I didn’t know anything about this safe conception among PLHIV. So, when I saw the letter, I was eager to come and learn a lot about it. And I think now when I go back, anytime any of the clients come for a refill, I will have to talk about it every day to them because some of my clients do say that ‘oh, because of this condition, I won’t give birth and one of my clients went to do abortion because she taught that when you are a positive person and you are pregnant, you will deliver and have an [HIV] positive baby. So, when I go back, I have more than enough knowledge to educate them more about this.” P3 FGD 1

“I would say aside from the main topic (safe conception strategies), we tackled stigma and discrimination, which I think with that, we can blend it and use it to work well at our clinics.” P2 FGD 1

“I think through this counselling session and all those things (learned from the SCTP), it will make your clients draw closer to you, have more confidence to tell you anything about their relationship.” P4 FGD 2

9.3.5.2 Existence of conflicting professional ideologies

The participants were specifically asked if they were aware of any healthcare programme in existence that the SCTP is incongruent with. Also, they were asked if their professional ideology contradicts the assumptions of the SCTP. Most of the participants stated that they did not know of such a programme. Some indicated that the SCTP rather compliments some existing HIV programmes such as the PMTCT. Some insinuated the relationship between SCTP and other programmes by stating that they should be included as shown by this quote:

“Also, I ...want to add that since we are talking about conception, after conception, there is delivery. So, after delivery or when you deliver, I think we should add that information too to the manual – in the sense that after delivery, what happens? Though we might know since this is coming as a manual, I think it should be added. So that we know that when you deliver, this is what happens to the child and the mother. That is what I think”. P2 FGD2.

9.3.6 Summary from the FGD

From the results, it came to light that the trainees, generally, found the programme comprehensible, useful and timely. They have acquired knowledge and skills that improved their confidence level and would bear positively on their attitude towards their client as well as the care they render to them. Their main issues that came up to inform the revision of the SCTP programme was about increasing the duration of the training programme. The other

suggestions for inclusion in the model such as postnatal care for mother and baby were beyond the scope of SCTP.

9.4 RESULTS OF THE WRITTEN EVALUATION BY HCWs

Twenty HCWs formed the cohort of participants, drawn from 15 hospitals in the Volta Region, who took part in the two-day pilot training programme. Out of that, 18 participants from 14 hospitals representing 14 ART units returned their written evaluation reports. The rest two could not submit theirs despite the many attempts to retrieve it.

9.4.1 Demographic characteristics of the participants

The demographic characteristics of the participants is as presented earlier under the quantitative section, hence, left out here.

9.4.2 Findings from the written evaluation of HCWs

From Table 9-2, all the participants indicated that the methods of delivery and methods of teaching used in the programme were good. They indicated that none of the teaching methods needs to be changed. More than four-fifths of the participants (88.9%) also reported finding the contents of the programme appropriate; the rest were undecided. All the participants judged the training materials; the resource materials (PowerPoints, handouts, and other related training materials) as being friendly and at an appropriate reading level for them.

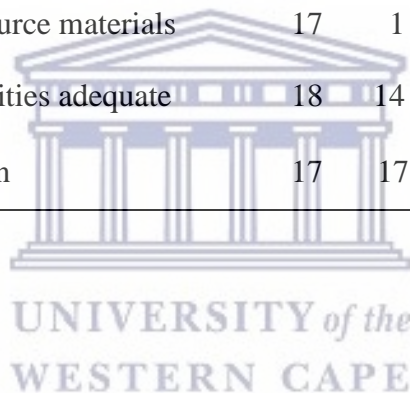
Table 9-2: Responses from the post-SCTP

written evaluation of the participants

Item	N	Frequency (%)		
		Yes	No	Neutral
Method of delivery useful in increasing knowledge	18	18 (100)	0 (0.0)	0 (0.0)
Methods used in teaching work well	18	18 (100)	0 (0.0)	0 (0.0)

Item	N	Frequency (%)		
		Yes	No	Neutral
Teaching methods needing change	18	0 (0.0)	18 (100)	0 (0.0)
Contents were appropriate	18	16 (88.9)	0 (0.0)	2 (11.1)
Training materials have appropriate reading level	18	18 (100)	0 (0.0)	0 (0.0)
Right topics covered	16	14 (87.6)	1 (6.3)	1 (6.3)
Some topics are missing	15	2 (13.3)	10 (66.7)	3 (20)
Insert examples from pilot	15	4 (26.7)	8 (53.3)	3 (20)
Materials (handouts, PowerPoint etc.) were friendly	17	17 (100)	0 (0.0)	0 (0.0)
Suggestions for additional resource materials	17	1 (5.9)	12 (70.6)	4 (23.5)
Allotted time for learning activities adequate	18	14 (77.8)	4 (22.2)	0 (0.0)
Workshop met your expectation	17	17 (100)	0 (0.0)	0 (0.0)

N = is the number of participants



More than four-fifths (87.6%) of the participants indicated that the right topics were covered in the programme. However, two of the participants (13.3%) expressed the thought that some topics they were expecting did not feature in the programme. A participant's suggestion that "what happens to the children after delivery" should be incorporated into the programme was noted (*not shown in the table*); the second person did not recommend any topic. Still, on the contents of the programme, majority (70.6%) of the participants thought the resource materials used for the programme were adequate but one respondent thought otherwise. The participant suggested that a certificate for the participants should be incorporated. The rest (23.5%) of the participants were silent. Also, a little over a fifth of the participants (22.2%) indicated that the time allotted to the learning activities were not adequate; however, no specific suggestions

were made when asked to elaborate on their observations. Further, a little over a fourth (26.7%) of the participants thought that some examples that came forth during the training programme should be incorporated into the revised version of the SCTP. Their suggested areas to be included were “punishment for stigmatization, effective communication, client centred counselling, safe sex for procreation, routine STI check-up” (*suggested areas not shown in the table*).

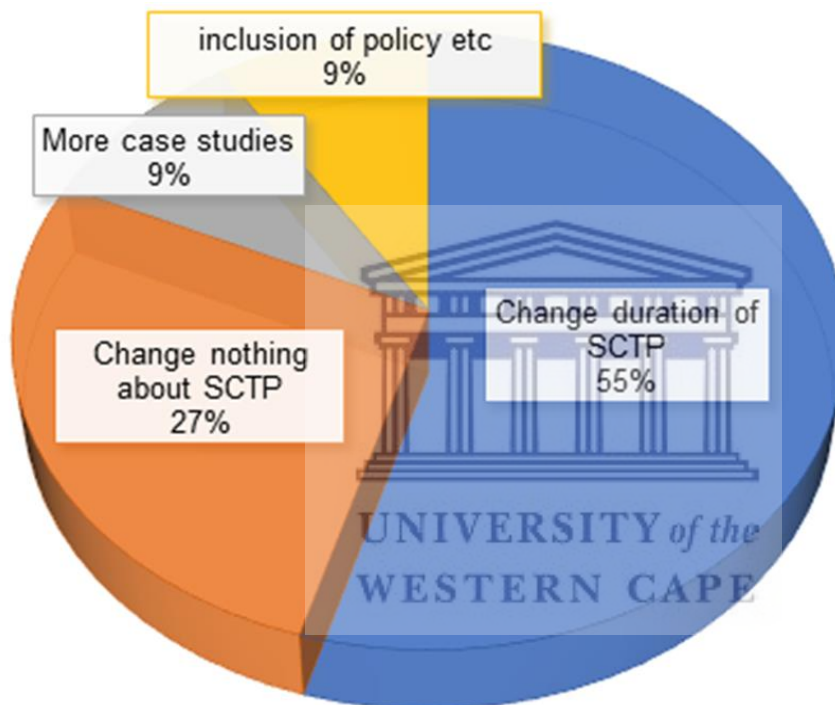


Figure 9-1: Views of HCWs on what to change in the SCTP.

The area of much consensus regarding revision in the SCTP has to do with the duration of running the SCTP (Figure 9-1). Of the 18 participants, 11 responded to the question requesting their views on what they might change or do differently should they be tasked with the development of the SCTP. The rest did not provide any answer. Out of the 11 participants, 55% thought there was a need for a change in the duration the programme is run. They think increasing the duration of running the programme will make room for adequate learning as

depicted in the pie chart (Figure 9-1). Some suggested 3 to 4 days as the duration for the programme (not shown).

Table 9-3: Post-SCTP written evaluation of participants (short responses)

Items	N	Total responses	Frequency	%
Most important things learnt (by module) *				100
Antiretroviral therapy			6	16.2
Communication in healthcare	18	36	10	27
Dignity conserving HIV care			10	27
Reproductive choices in HIV			9	24.4
Others			3	5.4
Most effective presentation method*				100
Case study			8	22.2
Group discussion/exercise	16	26	13	36.2
Lecture			7	19.4
Role play			8	22.2
Usefulness of SCTP*				100
Acquisition of knowledge			15	55.6
Acquisition of skill	18	27	6	22.2
Increased confidence			3	11.1
Improved attitude			1	3.7
Others			2	7.4
Example of practice change				
Maintenance of dignity			1	8.3
Safe conception education	12	12	8	66.7
Effective communication			1	8.3
Attitude change toward clients			2	16.7

Items	N	Total responses	Frequency	%
Need to implement safe conception education*				
Audio-visuals			9	34.6
Books/manuals/newsletters	16	26	8	30.8
supervision			7	26.9
Others			2	7.7
Proposed Beneficiaries of SCTP*				
Other ART staff			3	11.1
Clinical staff	16	27	11	40.7
Allied staff			9	33.3
Others			4	14.8
Proposed Beneficiaries of SCE*				
Women			7	29.2
People living with HIV	18	24	5	20.8
Vulnerable			7	29.2
others			5	20.8
SCTP conflicting other programme(s)				
Yes			0	0
No	18	18	12	66.7
Don't know			6	33.4
SCTP complementing other programme(s)				
PMTCT			3	16.7
None/Don't know	18	18	13	72.2
Others			2	11.1

* The number of responses is greater than the number of participants due to multiple answers

N = is the number of participants. ART – antiretroviral therapy, SCTP – safe conception training programme, SCE – safe conception education

The usefulness of the programme is as indicated in Table 9-3. When asked to state the three most important things learnt from the SCTP, the majority of the aspects learnt, as reported by the participants, came from four main components dignity conserving care (27%); communication in healthcare (27%); reproductive choices in HIV (24.4%); and antiretroviral therapy (16.2%). The participants acknowledged the training programme as useful because they have acquired knowledge (55.6%), skills (22.2%) and confidence (11.1%) that would help their practice mainly through the initiation of SC education (66.7%) for a change. Other areas of change expected in their practice were expressed as a positive attitudinal change toward clients, effective communication and maintenance of dignity.

Over a third of the participants (36.2%) indicated that their preferred teaching method was group discussion/exercise. The participants stated that, like themselves, others can also benefit from the SCTP. Those listed include physicians, prescribers and physician assistants categorised as clinical staff (40.7%); pharmacists, health promotion officers and laboratory technicians grouped as allied staff (33.3%) and others (14.8%) (Teachers and religious leaders). Some of the participants (11.1%) also indicated that all other staff at the ART unit also need the SCTP. Further, participants listed some categories of people who could benefit from SC education aside from the original intended audience (thus WLHIV) among which were people living with HIV (20.8%) and the vulnerable (such as commercial sex workers and partners of PLWHIV) (20.8%).

Concerning other programmes, most of the participants (66.7%) indicated that the SCTP did not conflict with any programme in HIV care while 16.7% stated that it complimented prevention of mother to child transmission (PMTCT) programme. All the participants indicated that the workshop met their expectations (Table 9-3).

9.5 RESULTS FROM THE WRITTEN EVALUATION OF SCTP BY THE OBSERVER AND TRAINERS

The written evaluation of the SCTP from the perspectives of the two trainers and an observer who conducted the two-day training programme for the HCWs are reported here.

9.5.1 Particulars of the trainers and observer

The two trainers of the SCTP pilot, a male and a female, were the trainers for the Volta Region. The female was at the rank of Deputy Director of Nursing Services, the highest and one of the decision-making ranks in nursing. She was also the Nurse Manager (head of nursing services) at one of the hospitals in the region. She has over a decade's experience in HIV care. The male facilitator was the Regional Data Manager. He had over six years' working experience in the field of HIV as the data manager. They have been trainers for over five years in the region. They are responsible for training staff in new HIV care protocols in the region.

The observer was a medical sociologist and also a trained teacher in active service. He teaches at a senior secondary school. He had his second-degree dissertation in HIV prevention. He had worked with some non-governmental organizations (NGOs) in reproductive health and HIV care in the Volta Region for over four years. Both the trainers and the observer were married with children. Their ages ranged between 35 to 58 years. They had either a friend or relative living with HIV. They all occupy decision-making positions in their respective careers. All three evaluated the programme individually from their capacities as trainers and an observer.

9.5.2 Results of the SCTP evaluation by trainers and observer

The perspectives of the observer and the two trainers brought to the fore, both the strengths and weaknesses of the SCTP. Regarding the mode of delivery of the programme (face-to-face delivery) and the methods of delivery (participatory methods), all three (two trainers and an

observer) indicated that they were appropriate and worked well. Hence, they asserted that the delivery methods used should not be changed. The trainers were in accord that the components of the programme were appropriate in content, depth and sequence and also of appropriate reading level. They also agreed that the needed topics were covered. In the same vein, the trainers further indicated that the teaching and learning resources were adequate, appropriate and engaged the participants. They, therefore, held the view that there was no need for additional materials in this regard.

On the negative side, the trainers stated that the time allotted for the class activities and the programme as a whole was quite inadequate. This concurred with the observer's indication that there should be an increase in the time allotted to class activities. He reported a rush in some lectures to compensate for extra time used in-class activities. The observer, therefore, suggested an increase in the time frame for the class and group activities to about an hour each. He also suggested 'take-home assignments' for the participants to occupy them as well as prepare them for the next day's sessions. Further, he also recommended exercises that could test the understanding of the participants. Concerning the contents and materials, the observer noted that the trainers kept the participants lively and engaged throughout the programme they interacted among themselves. He also indicated that the components flowed smoothly. Taken as a whole, the observer and both trainers affirmed the programme was effective in imparting knowledge, skill and improved attitudinal change in healthcare workers.

9.6 RESULTS OF THE SCTP EVALUATION BY SAFE CONCEPTION EDUCATED WLHIV THROUGH INTERVIEW

During the follow-up, the researcher interviewed 23 reproductive-aged (18-49-year-old) WLHIV who attended these facilities for their routine ARV refills and were educated on SC. The purpose of interviewing the WLHIV, the end-users of the training programme developed,

was to explore their perspectives of the SC education received regarding its importance, usefulness, and recommendations for improvement.

9.6.1 Results from interviewing WLHIV

As illustrated in Table 9-4, a total of 23 WLHIV were interviewed on their perspectives of SC education they had received earlier in the day. Their age ranged from 23 to 44 years with an average of 35.3 years (standard deviation = 4.9 years). They were predominantly Ewes (82.6%). Except for 2 women (8.7%) who had no formal education, the rest had primary (39.1%), junior/senior high secondary (43.5%) and tertiary (8.7%) education. The majority were mostly self-employed with artisanry work with only two (8.7%) in civil service. Though 73.9% of the women were in amorous relationships (either married or co-habiting), only 34.8% reported disclosing their HIV status to their partners. On average, a woman had been living with HIV for 3.5 years and had been on ART for 3.4 years. An average lifetime pregnancy and birth was observed to be 3 and 2 respectively with 2 surviving children.

Table 9-4: Demographic characteristics of WLHIV

Characteristic	Frequencies (%) [n = 23]
<i>Age group</i>	
<30 years	3 (13.0)
30-34 years	7 (30.4)
35-39 years	9 (39.1)
≥40 years	4 (17.4)
<i>Marital status*</i>	
Single	6 (26.1)
Cohabiting	4 (17.4)
Married	13 (56.5)
<i>Ethnicity</i>	
Ewe	19 (82.6)
Others	4 (17.4)
<i>Level of education</i>	

Characteristic	Frequencies (%) [n = 23]
No formal education	2 (8.7)
Primary	9 (39.1)
JSS/SSS	10 (43.5)
Tertiary	2 (8.7)
<i>Occupation</i>	
Civil servants	2 (8.7)
Self-employed	21 (91.3)
<i>Duration HIV infection (years)</i>	
1-5	20 (87.0)
6-10	3 (13.0)
<i>Lifetime pregnancies</i>	
None	1 (4.3)
1-5	20 (87.0)
6-10	2 (8.7)
<i>Lifetime births</i>	
None	1 (4.3)
1-5	21 (91.3)
6-10	1 (4.3)
<i>Children alive</i>	
None	2 (8.6)
1-2	15 (65.2)
≥3	6 (26.2)
<i>Partner status</i>	
Negative	3 (13.0)
Positive	3 (13.0)
Unknown	17(74.0)
<i>Disclosure</i>	
Yes	8 (34.7)
No	15 (65.3)



**marital status (ceremonial and traditionally accepted unions); relationship (cohabiting or courting)*

Evaluation of the SC education, as per the WLHIVs who participated in the teachings, was in four a priori themes with their sub-themes viz: *evaluation of the safe conception education in*

context, evaluating the *input* domain of safe conception education, evaluating the safe conception education *process* by WLHIV and evaluation of the safe conception education as a *product*. These are summed up as under two overarching themes as *WLHIV's perception of safe conception (importance, usefulness, preferences and anticipated practice challenges) covering the context and product aspect of the CIPP model, and recommendations for improvement (better delivery of SCE), which cover the input and process aspect of the CIPP model.*

9.6.2 WLHIV's perception of safe conception education

This refers to WLHIV's awareness and impression of SC education as well as their evaluation of its usefulness, their preferences and anticipated practice challenges against the backdrop of their HIV status and desire to have children. About the CIPP model which underpinned this pilot evaluation, this covers the context and product domains (See Table 9-5).

Table 9-5: Themes and sub-themes of the from safe conception education of WLHIV

Overarching Themes	CIPP domains as themes	Sub-themes
WLHIV's perception of safe conception education	1. Evaluation the context of safe conception education	(a) Previous knowledge (b) Beneficiaries of SCE (c) Importance/usefulness of SCE
	2. Evaluation of safe conception education as a product	(a) Impression with the SCE (b) Safe conception practice related issues (c) Conflicting beliefs to safe conception
	3. Evaluation of the inputs of safe conception education	(a) Additional requirements for SCE (b) Couple safe conception education
Recommendation for improvement	4. Evaluating the safe conception education process by WLHIV	(a) Delivering SCE (b) Understanding safe conception strategies

9.6.2.1 Evaluating the context of safe conception education among WLHIV

The context evaluation of the CIPP model appraises the need and opportunity for a programme of interest in a defined population of a setting. For WLHIV desiring a child within the next 24 months, the context of SC education implies, that against the background of the previous knowledge they have, they would determine whether there was a need for it and opportunities for its use.

9.6.2.1.1 Previous knowledge on conception in HIV

The narrations of the women indicated that they have an appreciable level of relevant knowledge about the HIV condition which can be useful in SC education, especially on ARVs adherence and condom use. However, they also have some misconceptions and inaccurate information on childbearing which reflected in their risky sexual behaviour in the peri-conception period. One of such is the practice of unprotected sexual intercourse in the interest of conception which was not timed to the peak of their fertility as they were taught during the SC education. Another commonly reported lapse was inaccurate tracking of the fertile period. A misconception is that when one is on ARV, she cannot infect her partner (none of the women who said this ever-mentioned viral load monitoring as a prerequisite for effectively practising such strategy termed U = U).

“In the past, how I was not able to give birth to a child, he (husband) came to tell the nurse that he wanted me to have a child and they said that my ability to give birth is determined by how I take the medication. If I continue taking the medication, it will suppress the disease to the point where it will not be an obstacle to anything for me so we can stop using the condom before we resume it again. If we do it like that the pregnancy will come and truly, when we did it like that, I became pregnant and gave birth.... They said when I start my menses I should wait for about a week or when the menses start ceasing gradually, then we have sex and if we have sex that is the end. Then if we want to have sex after

that we resume using the condom.” (Participant 16, 35 years, partner status unknown).

From their previous knowledge stems some pressing issues that the WLHIV indicated they needed answers for. These were diverse and most have a direct bearing on the future uptake and practice of SC education as they are contextual factors. Anticipating these issues and having suggestions to aid their resolution may place HCWs at vantage positions to facilitate the uptake of SCE.

They ranged from partner and child disclosure through getting uncooperative partners to report for SCE and inconvenient clinic days to HIV cure. One woman’s burning issue regarding the uptake of SCE is captured in this excerpt:

“Since the man has been refusing (to sleep with me), how would I convince him to come to the hospital (for safe conception education)?” (Participant 14, 34 years, partner status unknown).

“The question I have is for how long shall I be on the medication and also, shall we be completely cured of this disease one day before we die or is it for life? That’s the only question I have.” (Participant 10, 27 years, partner status unknown).

9.6.2.1.2 Beneficiaries of safe conception education

Aside from themselves, some of the WLHIV recommended other people who could also benefit from the SC education. While some said all persons living with HIV should be given SC education, others mentioned men living with HIV. Yet others think the families of persons living with HIV should be included.

“I see that all those living with the disease need to have this education.” (Participant 3, 33 years, partner status unknown).

“I don’t know any particular person but if I know that a particular person is also living with the disease [HIV], then that person can be taught these things.”
(Participant 11, 33 years, partner status unknown).

9.6.2.1.3 Importance and usefulness of safe conception education

Most of the women expressed that the SC education was good. When asked how important and useful the SC education would be to them, most of the WLHIV indicated that the knowledge acquired would help them to prevent both vertical and horizontal transmission of HIV to their unborn babies and male partners respectively. This stated benefit - prevention of horizontal transmission to male partners - was the backdrop of the development of the SCTP. Other benefits also mentioned include planning for pregnancy and living in a marriage with the disease thereby preventing divorce since they can give birth with the HIV infection.

“... The benefits I will derive include my ... well-being and that of my husband and children, and how to avoid transmitting the disease to the unborn child during my pregnancy.... If the teachings I have received, if I follow the instructions, it will prevent my husband from being infected with the disease.”
(Participant 3, 42 years, partner status unknown)

9.6.2.2 Evaluation of safe conception education product

Product evaluation in the CIPP model entails judging the attainment of the programme objectives (Stufflebeam, 2003:3). In this study, SC education was aimed at creating awareness among WLHIV of the existence of SC strategies to adopt them and use in their attempt at pregnancy to reduce the risk of transmitting HIV to their male partners. Subsequently, the interview was conducted to appraise WLHIV’s awareness, comprehension and preference for SC strategies as a product. The researcher expected that the feedback could also give insight to possible unfavourable reactions and misconceptions among WLHIV regarding SC education

as a product if any. This could help in the revision of the SCTP by shedding light on the grey areas. It may also be used to alert the HCWs on such areas during the training.

9.6.2.2.1 Impression with the safe conception education

It was observed that most of the WLHIV expressed that the SC strategies taught were to assist them to bear children while they protect their partners against infection. This, the women indicated, was a good education.

“We were discussing the steps that I should take so that the child would not be infected and my husband too.” (Participant 7, 34 years, partner status unknown).

“As a woman, when I have my menses, and when I realise that it is my ovulation period, we can have sex without the condom but after that, we must continue using it. Secondly, she [attending HCW] said if that option did not work, another option is for the man to ejaculate into a tube to be collected with a syringe and I inject it into my vagina while I lie down for some time. That can also help me to become pregnant”. (Participant 6, 29 years, partner status unknown).

9.6.2.2.2 Safe conception practice-related issues

Notwithstanding the benefits of SC education, the WLHIV anticipated challenges, especially with home self-insemination, which they were not upfront with. In the first place, some misunderstood the procedure - they expressed that they would be injected with the semen while others also had the understanding that they needed to send the semen to the ART unit for the insemination. Others expressed difficulty in getting their partners to practice the methods since they have not disclosed their status to them.

“She (attending HCW) said they have realised that if a woman wants to have a child if she sleeps with a man, they can get a tube, like the one used in the laboratory and pour the man’s semen into it and use a syringe to siphon it and

bring it [to the ART unit] and when they bring it they will inject the woman with it and when the woman ovulates, the sperm will fertilise it and she would become pregnant and give birth. That's what I heard her say." (Participant 27, 36 years, partner status unknown.).

9.6.2.2.3 Existence of conflicting beliefs to safe conception

On further probing, some WLHIV also expressed that home self-insemination contravened their beliefs. These beliefs expressed had various undertones; religious, traditional and normative. These conflicting beliefs, they said, could serve as impediments to the uptake of the SC strategies. The majority of the informants voiced preferring timed unprotected sexual intercourse over timed self vaginal insemination. They found the latter (timed self vaginal insemination) unnatural, unattractive and expressed disinterest in it. They believed their partners would not approve of it because it is out of the ordinary.

Another reason expressed was that this 'unusual' method of attempting pregnancy would give them off to their partners since they had not disclosed their status to them. Further, some of the WLHIV revealed that their partners might think they meant evil; thus, they were collecting the semen to cast spell on them (their male partners). Some also cited provoking God to anger and hence punishment, as an obstacle to practising manual self-insemination. However, when asked what their take would be if their male partners agree on manual self-insemination, almost all the women said they could practice it then (if it was acceptable to their male partners).

"I was asking him [attending HCW] one question - that he [my husband] will not agree to have sex with me using a condom; how much more using a condom to release his semen into it? Because he is a fisherman and a minister of God and always say that those who masturbate or abort pregnancies are sinning. So, he will not agree to release his semen into anything for me to inject or insert into myself." (Participant 8, 34 years, partner status unknown).

“It is a little worrying because how I will manage to draw up the semen would be difficult because he may think I would use it to cast spell on him.” (Participant 16, 35 years, partner status unknown).

9.6.3 Recommendation for improvement- better delivery of the SCE

Recommendation for improvement describes what the WLHIV in their expressions suggested for the revision and improvement of the SCTP. This fell in the domains of input and process of the CIPP model.

9.6.3.1 Evaluation of the inputs of safe conception education

Input evaluation appraises the chosen strategies, procedures, activities and logistics for conducting a programme geared toward the realization of the goal of that undertaking (Stufflebeam, 2003:57). In this pilot, the input evaluation for the SC education from the perspective of WLHIV emanated from enquiring from them what they expected to be part of the education but was absent or was not well done. It also enquired of them what other inputs (necessities/conditions) were necessary to facilitating their successful adoption of SC. The WLHIV were probed to express what they thought they might need in addition to the SC education given to them, to adequately comprehend and practice the strategies outlined.

9.6.3.1.1 Additional requirements for SCE

Many of the WLHIV indicated that what they needed was contained in the education they had received; they did not think anything else could be added to what they have been taught. What they rather requested was the availability of the HCWs for further explanation or repetition of the SC education on their request; even at a phone call.

“Me, like this, I understand it; so, I don’t see any other thing that you should add.” (Participant 3, 33 years, partner status unknown)

“May be if anything I have to call on him (attending HCW) for further explanation of other things.” (Participant 7, 34 years, partner status unknown)

This, notwithstanding, a few of the WLHIV requested assistance to tactfully disclose their status to their partners. Some also requested help on how to manage the ARVs.

“I need a lot of advice on what my husband should know and how to talk to my husband [on my HIV status] without him becoming angry.” (Participant 3, 33 years, partner status unknown).

“Yes, the last time I came for my medication I explained to her that anytime I take the drugs I feel drowsy so she asked me “at what times do I take the medication”? I told her, at times, due to my work as a seller, before I close from work and get home to cook and eat before taking the medication, it gets to about 10.00 pm, and I know if I take the drugs at 10.00 pm, it will make me drowsy the following morning and I feel the hangover. So, I bring the time forward to about 7.00 pm and I realised that the effect of drowsiness has reduced but the daily taking of the drugs is my problem.” (Participant 6, 29 years, partner status unknown)

9.6.3.1.2 Couple safe conception education

A few of the women also expressed the desire for couple SC education as a requisite for their uptake. These women’s spouses were aware of their partner’s HIV status and hence they were at ease in suggesting couple education. However, one of the women expressed the uncooperative nature of her husband and asked of any available strategy that can help her predicament.

“I would bring him (partner) here for them (attending HCWs) to tell him (about safe conception education) because I may forget so I will have to bring him here.” (Participant 6, 29 years, partner status unknown).

“So, I told him that if I visit the clinic, I will bring him the report and if possible, the two of us can come (to the clinic) so that they tell us what to do.” (Participant 1, 42 years, partner status unknown).

9.6.3.2 Evaluation of the safe conception education process by WLHIV

Process evaluation in the CIPP model entails assessing the implementation programme. At this pilot stage, it entails WLHIV assessing the SC education they received from HCWs concerning how they thought the education should be done to facilitate their understanding of the contents being presented to them.

9.6.3.2.1 Delivering safe conception education

The perspectives of the WLHIV concerning the suitability of the delivery of the SC education in aiding their understanding varied. Some of the women expressed that health education was the domain of HCWs and as such, they should know better how to educate people to understand. They indicated that anyway the HCWs present the programme they (WLHIV) have to adjust and understand.

“You are the nurses who are teaching us so if we come to you, the way you will do it so that it will stick into our minds, you know it.” (Participant 5, 36 years, partner status unknown)

Yet others also expressed satisfaction with the mode of delivery of the education because they understood the teachings. A woman also expressed the desire for mass education but not individual sessions.

“I am satisfied with the way he educated me because not everyone would have time for you. For your ...health, someone should have to spend time on you, sit down with you and talk to you like this? ... how we were invited and taught individually, it implies others have not heard it so all of us have to come together to be taught because in the classroom it is the teacher who stands in the front and teaches everything for everybody to understand that this must be done this way and that way so all of us must be called together on the same day as the day we

come for medication, they teach all of us. If someone does not comply, it is his/her problem.” (Participant 10, 27 years, partner status unknown)

9.6.3.2.2 Understanding safe conception strategies

When asked to give a gist of what they had been educated on during the SC education class, the majority of the WLHIV were able to give some account of TUI and TVI. A few were able to describe more than two of the strategies correctly, including assisted reproduction. Though the WLHIV expressed understanding of the concept majority were not able to outline the tracking of the fertile period accurately.

“He [attending male nurse] said if I wanted to marry, I can; but not to engage in unprotected sex and if I ... want to have a child then we must use a condom. ... if I realise I am ovulating, during the sex the man can release his semen into a container and I draw it with a syringe. If he likes, he can insert or inject it into me or I do it myself. It has to stay in me for at least one hour and I will be pregnant. Apart from that, if I will not draw the semen, we can continue having sex using a condom until the time I realise I will become pregnant then we can have unprotected sex and after I realised that I have become pregnant. We can continue using a condom during sex but it should not be every time. Fourthly the man can release his semen into a tube to be put in a machine and later put into my system and I can carry the baby and deliver without it being infected with the disease.” (Participant 10, 27 years, partner status unknown).

There were also some misconceptions. For the manual self-insemination, some of the women had the understanding that they would be injected. Some of the women got the understanding that they needed to send the semen to the HCWs at the facility for insemination. Others also thought that assisted reproduction or adoption meant buying a child and hence they were against these strategies. These issues must be clarified with an activity demonstrating the procedure in the training session for the HCWs and the same (demonstration) stressed in the course of HCWs educating WLHIV on SC.

“I am allergic to injection (I feel pains when I am injected) and also, I can’t do that thing to myself.” (Participant 3, 42 years, partner status unknown)

9.6.4 Summary of the findings from WLHIV

The WLHIV were receptive to SC education and linked it to the prevention of vertical and horizontal HIV transmission. They were able to give an overview of the various SC strategies they were educated on but the majority could not track the fertile period accurately. Only one woman voluntarily accepted to practice timed vaginal insemination (TVI), all others think they need the consent of their partners to do so. The TVI was unpopular among the women because of moral and religious conflicts. The popular choice was TUI because it is considered natural. The women verbalised acceptance of the mode of delivery of the education and required routine explanation for a better understanding.

9.7 OUTCOMES AND RECOMMENDATIONS FOR REVISION OF THE SCTP

Collating the results obtained from all the participants in the evaluation of the SCTP (Table 9-6), the major revision suggested (from HCWs, trainers and observer) has to do with increasing the duration of the programme so that it lasts between three to four days. This could make room for a more appreciable time with learning activities. There was also a suggestion for homework and class exercises (from trainers and observer) to test the understanding of the participants. The other suggestions are either taken care of in SCTP (for example, assistance with disclosure) or out of scope of the programme (post-partum HIV care, adherence counselling and audiovisuals for SC education of clientele).

9.8 FINDINGS FROM THE SCTP PILOTING FOR DISCUSSION

- The participants evaluating the programme (trainers, observer, HCW trainees and WLHIV) found the SC training and SC education useful. They recommended it for other health professionals and clients.
- Both HCWs and WLHIV identified SC with HIV prevention. They also found SC education acceptable, feasible and practicable.
- The SCTP was effective in significantly improving the knowledge, attitude and self-efficacy of HCWs in the qualitative study. This was confirmed in the FGD and written narrative of HCWs who indicated they had acquired knowledge, confidence as well as improved attitude from the programme.
- Comparatively, HCWs generally exhibited relatively poor knowledge, attitude, self-efficacy and interest regarding TVI, PrEP and VMMC than TUI, ART and STIs prior to the training; but after the training this disparity is not obvious.
- Both the training participants (HCWs) and their clients (WLHIV) recommended couple education on SC.
- There may be challenges with the uptake of some SC strategies such as TVI and assisted reproduction viz: poor understanding of the different strategies, cultural undertones and getting partner support. The uptake of SC strategies among WLHIV may also be influenced by their partners, hence partner endorsement may be necessary for practice.
- Both pre- and post- training, all HCWs believe that their colleagues and managers will endorse SC education of WLHIV. (Hence, the poor attitude observed may be from socio-cultural factors rather than the absence of policies). None raised the issue of unavailability of policies and guideline on SC.

Table 9-6: Summary of outcomes and recommendations for revision of the SCTP

EVALUATORS	DOMAINS OF CIPP MODEL				RECOMMENDATIONS FOR REVISION OF THE SCTP	REMARKS	
	CONTEXT	INPUT	PROCESS	PRODUCT			
HCWs	Written Evaluation	SCTP is a useful tool for training HCWs and other staff who provide HIV care	Teaching and learning materials were appropriate and user-friendly	The teaching and learning methods used to instruct the SCTP are appropriate and effective	The workshop met HCWs' expectation.	Insert examples from pilot 4 (26.7%)	Done
					They acquired knowledge and skill for SC education	Allotted time for learning activities, not adequate 4 (22.2%)	Extra time allotted
					Their confidence has increased and their attitude has improved	Suggestions for additional resource materials but none suggested	not done
					Change duration for SCTP to 3-4 days	duration extended	
	FGD	Useful and needed by the HCWs and other stakeholders in HIV care; on time and 'on point'	Course structure and components are adequate and appropriate	Good delivery, 'on point'	Acquired much knowledge	Extend the duration of training (no suggestion given)	duration extended
The choice of teaching and learning materials were appropriate.							Good flow of models
			The facilitators		Anticipate good	Post-partum HIV care	Out of scope of SCTP

EVALUATORS	DOMAINS OF CIPP MODEL				RECOMMENDATIONS FOR REVISION OF THE SCTP	REMARKS	
	CONTEXT	INPUT	PROCESS	PRODUCT			
Trainers and Observer	Written Evaluation	The programme is useful for HCWs and other persons who work with HIV clients	were up to the task; they exhibited knowledge and experience in the delivery of the SCTP	interpersonal relationship with clients	Adherence counselling	Out of scope of SCTP	
			Audio-visuals for SCE	Out of scope of SCTP			
			Bigger venue Housing of participants	Not applicable Not applicable			
					More demonstrations	Done	
			The programme components are adequate, appropriate in scope, depth and sequence. Teaching and learning resources were adequate, appropriate and engaged the participants.	Class sessions flow smoothly, participants were engaged throughout the class	The programme was effective in imparting knowledge, skill and improved attitudinal change in healthcare workers.	More time for class activities.	Extra time allotted
					Take-home assignments	Done	
					Exercises to test the understanding of participants	Done	
WLHIV	Interview	SCE is useful; helps to prevent infection of partner and baby, prevent	The HCWs are the custodians of HIV care; what they	The HCWs are the ones with the 'know how' hence they	WLHIV have gained some level of understanding	More explanation which should be available even on phone.	Not applicable

EVALUATORS	DOMAINS OF CIPP MODEL				RECOMMENDATIONS FOR REVISION OF THE SCTP	REMARKS
	CONTEXT	INPUT	PROCESS	PRODUCT		
Experts including (Supervisors)	divorce due to childlessness.	teach is acceptable to them (WLHIV).	are better suited to determine how we should be taught.	of the SC strategies.		
	Recommended SCE for others	They did not think anything else could be added to what they have been taught	The method of SC education is satisfactory.	The practice of timed vaginal self-insemination seemed to contravene beliefs	Couple education Assistance with disclosure Demonstrations are needed for better understanding and practice	Out of scope of SCTP Included Included
	Review	Reviewed of the whole SCTP development process		-		

9.9 DISCUSSION OF THE FINDINGS FROM THE SCTP PILOTING

This is the last chapter under section four. Here, the findings from the various data sources that evaluated the SCTP are compared and discussed. Across the four strata of the population involved in the piloting of the SCTP programme developed, the following are the findings that came to the fore.

9.9.1 Safe conception training and education are useful and acceptable

The participants evaluating the programme (trainers, observer, HCW trainees and WLHIV) found the SC training useful and recommended it for others. The trainers and observers recommended the SCTP for training on the subject. Likewise, the HCWs recommended that other health professionals who constitute the HIV care team such as medical officers and pharmacists. Both WLHIV and trained HCWs also expressed the need for other persons living with HIV to be considered for inclusion in the SC education. This observation was reported by other authors from other settings. Brown *et al.*, (2016:17) reported from Kenya that after involving a cohort of HIV-care providers (some of whom are nurses) and persons living with HIV in a SC training and education respectively, they communicated the usefulness of the programme in an interview. From South Africa, it was also reported that a cohort of persons living with HIV who went through SC education perceived it as useful (Schwartz *et al.*, 2019:6).

While knowledge and appreciation of the usefulness of SC among both HCWs and WLHIV are important, they do not translate into uptake and utilization. But both parties must be able to use the knowledge to navigate other equally important contextual factors which include personal, interpersonal, sociocultural and health system-level issues (Gutin, 2019:113). In their conceptual frameworks to advice on providing SC, Crankshaw *et al.*, (2012:14) as well as Davies *et al.* (2017:37) articulated these factors to include communication, SC skills training,

availability of the strategies among others, at the level of both HCWs and WLHIV. Thus, knowing about SC and its usefulness is but one of the multiple issues that must be addressed to facilitate uptake and utilization, the current study has helped by creating that awareness among the participants. Both HCWs and WLHIV identified SC with HIV prevention which is the aim of HIV prevention strategies.

The HCWs did not only find the STCP useful, they indicated they would use it in the discharge of their duties and further recommended the training and education to other health professionals and clients. Likewise, the WLHIV also expressed the usefulness of the SC education to them and further listed other categories of people that could benefit from it. The HCWs further expressed how the knowledge and skills would be integrated into their practice. These communicate the acceptability and feasibility of the SCTP programme. The finding that the HCWs for whom the programme is developed found it useful, acceptable and feasible is a success for the SCTP. This is even so when the end users of the SC education (WLHIV) also communicated the same. These findings are similar to those of Kenya (Brown *et al.*, 2016:17) and South Africa (Schwartz *et al.*, 2019:4). However, there is a need for a follow-up study on the adopters to explore acceptability after actual use.

9.9.2 The safe conception training programme is effective

The SCTP piloting also demonstrated that it is effective in significantly improving the knowledge, attitude and self-efficacy of HCWs in the qualitative study. This was confirmed in the FGD and written narrative of HCWs who indicated they had acquired knowledge, skills, confidence as well as improved attitude from participating in the programme. In many studies, it was found that HIV-care providers' inability to effectively carry out SC education was due to poor knowledge, attitude and skills regarding the subject matter. In some of these studies, the authors reported that the HIV-care providers acknowledged their inadequacies and

requested for redress (Finocchario-Kessler *et al.*, 2014:14; Goggin *et al.*, 2014:1001; Goggin *et al.*, 2015:657; Laar, 2013:5; Mindry *et al.*, 2018:32; West *et al.*, 2016:8; Ngure *et al.*, 2017:57; Matthews *et al.*, 2016:6; Matthews *et al.*, 2014:215; Iliyasu *et al.*, 2019a:543). This was also reported from Ghana (Laar, 2013:4).

Against this backdrop, having a training programme that is effective in improving these domains for the HIV-care provider is a pivotal step towards SC education implementation (Brown *et al.*, 2016:8; Matthews *et al.*, 2017:5). Many studies have reported on the effectiveness of training in building staff capacity in HIV care (Driessche *et al.* 2009:2; Pawinski and Lalloo, 2006:1189; Naicker, 2016:1; Sodhi *et al.*, 2014). The returns of having HIV-care providers who are knowledgeable about SC with the right attitude is documented and has yielded good outcomes in South Africa's implementation study (Schwartz *et al.*, 2017:45). It ensures quality care, improves client turnout, satisfaction and uptake of services and thereby also improving HIV prevention outcomes. It also contributes to the HIV-provider's motivation and confidence and in the long run the quality of care (Davies *et al.*, 2017:39; Matthews *et al.*, 2017:8; Schwartz *et al.*, 2019:7; Brown *et al.*, 2016:66). As the SCTP demonstrated, it has the potential of improving the knowledge, attitude and self-efficacy domains of the HCW and thus, impact SC care positively.

In this study, it is observed that there may be challenges with the uptake of some SC strategies such as TVI and assisted reproduction viz: poor understanding of the different strategies, cultural undertones, need for partner endorsement. These challenges were also reported in the few studies that assessed acceptability and preferences for SC strategies (Schwartz *et al.*, 2016:5; Finocchario-Kessler *et al.*, 2014:11). One of the challenges with the uptake of the methods which seem to deviate from the traditional way of conception might be resistance. Schwartz *et al.* (2016:5) recount from their implementation study that men were not enthused with TVI because they felt the baby conceived by such means is not theirs – it robs them of

their manhood. Some authors also recounted WLHIV's expressed the baby born is not real and would have a questioned paternity (Finocchario-Kessler *et al.*, 2014:11). HCWs need to be prepared to do in-depth explanation with the precautionary measures that are put in place to prevent mix-ups in assisted reproduction.

9.9.3 The SCTP need some finetuning

The discourses with the stakeholders in the pretesting yielded fruitful outcomes; both commendations and recommendations for action. Triangulating the results obtained from all stakeholders revealed the main adjustment to the SCTP has to do with increasing the duration of the programme between three or four days to prevent overloading and adequately paced learning for participants. Further, suggestions also called for exercises and assignments should test the understanding of the participants.

In conclusion, the testing of the SCTP resulted in the realization of the objective four which was carried out – to test feasibility and effectiveness of the programme in achieving the purpose for which it was developed. The findings from the exercise confirmed that the SCTP is feasible and effective and as such can be use in training HCWs to on SC.

9.10 CHAPTER SUMMARY

In this last chapter of section four, the findings from the four sources which evaluated the SCTP, were presented and discussed. The findings were both quantitative and qualitative. All the evaluators related positively to the SCPT. Generally, the SCTP programme was found to have met the identified need (as established during need analysis) though some level of disapproval was noted among HCWs and WLHIV concerning TVI. On the whole, the training programme was found acceptable, usable, feasible and effective in addressing the deficiencies

in knowledge, attitude, self-efficacy and interest regarding SC education. The revised SCTP is presented in chapter ten of section five.



SECTION FIVE – PRESENTATION OF THE FINAL TRAINING PROGRAMME

The previous section (four) featured the piloting of the SCTP. In three chapters, the procedure for the piloting, the evaluation, and the findings were presented and then discussed. The findings from the evaluation were used to revise the programme and thus, improving its quality. Generally, the SCTP was found to be useful in HIV prevention, acceptable to both HCWs and WLHIV who are the intended beneficiaries. The intended beneficiaries also found the programme feasible for adoption and use.

In this last section (five) of the thesis, the fine-tuned but summarised version of the SCTP is presented after implementing the suggested recommendations from the participant evaluators involved in the piloting (trained HCWs, trainers, observer and WLHIV who had been exposed to SC education) in chapter ten. The last chapter of the section features the concluding segments, thus, conclusion, strengths and limitations of the study and then recommendations. The abridged version of the SCTP is appended to the appendices section (see Appendix 1).

CHAPTER TEN: THE REVISED SAFE CONCEPTION TRAINING PROGRAMME

10.1 INTRODUCTION

The development of the SCTP was based on the SC knowledge and attitudinal deficits identified in HCWs as well as the SC needs of WLHIV. From the time of its inception, through development to revision, the SCTP has gone through many reviews to ensure quality as tabulated in Table 10-1).

The developed programme has modules that spanned the basic areas of reproductive health such as patients' rights to found family to more specific and tailored modules which include the SC strategies. For the smooth running of the training sessions, the basic preliminary modules need to be covered before the specific ones. Each of the seven modules is designed with the development of HCW knowledge, attitude and skills on SC education in mind. Hence, each module features learning and outcome objectives with matching teaching methods favouring principles of adult learning. The teaching/learning methods employed are lecture, case-study, role-playing, small group discussions and plenary sessions.

Table 10-1: Activities undertaken to elicit quality assurance of the SCTP developed

Aspect for Evaluation	Participants involved	Method used	Rationale for the evaluation
Programme component or modules	Experts (obstetricians, clinical nurses, supervisors)	Expert review	To evaluate the appropriateness, structure, level, up-datedness, adequacy and sequencing of the components of the SCTP.
Programme materials	Trainers, observer and trainees	Pilot-testing	To ascertain the effectiveness, efficiency, readability and usefulness of written and other materials used in the programme.
Delivery methods/ technologies	Trainers, observer and trainees	Pilot-testing	To judge the appropriateness and effectiveness of the instructional delivery methods including media technologies.
Programme facilitators/trainers	trainees, observer	Pilot-testing	To rate the presentation skills, leadership and overall effectiveness of the instructor or facilitator.
Instructional activities	Trainers, observer and trainees	Pilot-testing	To evaluate the appropriateness and usefulness of class activities.
Programme duration	Trainers, observer and trainees	Pilot-testing	To assess the time length and sessions of the entire programme
Training environment	Trainers, observer and trainees	Pilot-testing	To evaluate the adequacy of the physical training environment, including the classroom, dining facilities, lodging and leisure facilities
Planned action/expectation	Trainees	Pilot-testing	To evaluate the participants' plans and expectations for applying what was learned upon returning to the job and to identify barriers to applying what was learnt on the job.
Logistics and administration	Trainers, observer and trainees	Pilot-testing	To evaluate the smoothness and effectiveness of scheduling, registration and other logistical and administrative matters associated with the programme
Overall evaluation	Trainers, observer and trainees	Pilot-testing	To determine the overall participant impression with the SCTP
Recommendations for programme improvements	Trainers, observer, trainees and WLHIV	Pilot-testing	To solicit suggestions and recommendations for improving the SCTP

Implementing the relevant recommendations by the participants (Table 10-2), the pretested and fine-tuned SCTP has other features which makes it different from the old version. It is a four-day training programme. It has time apportioned for each learning activity. Except for modules D and G, all the other modules have at least an extra activity added which includes take-home assignments. Demonstration and return demonstration were outlined for the SC strategies

(Module E) as suggested. Besides, exercise to test participants' understanding of the training was also developed (see Appendix 1 for the complete SCTP).

10.2 OVERVIEW OF THE REVISED SCTP

The SCTP has seven subject areas termed modules which are named alphabetically as A, B, C, to G. Each module has topics and sub-topics which are sequenced to aid the smooth flow of teaching and learning. The SCTP also features training objectives for each module and the teaching and learning methods. Following is an overview of the SCTP (also in Table 10-2).

10.3 INTRODUCTION TO SCTP

Trainer's role:

As a trainer of the programme, you must:

1. Establish rapport with the participants
2. Welcome them to the programme and thank them for honouring the invitation.
 - (a) Inform participants to sit in a horse-shoe shape facing the flip chart/whiteboard and the projector.
 - (b) Introduce yourself and co-trainers to the participants (name, facility, etc).
 - (c) Let participants introduce themselves to the hearing of everyone present.
 - (d) Assist participants to form five groups for exercises.

Table 10-2: A summary of the safe conception training programme (SCTP) modules

Module name	Outcome Objectives	Performance objectives	Lessons of the module	Useful References
A Dignity conserving HIV care	After completing this module, HCWs will acquire at least 50% of the requisite knowledge, attitude and skills to deliver dignified reproductive care to WLHIV in the context of childbearing.	After completing the module, HCWs will be able to: <ol style="list-style-type: none"> 1. Explain the importance of showing respect to our clients 2. Discuss the components of dignity conserving care. 3. List patient's rights that are closely related to healthcare (knowledge). 4. Limit interactions that demonstrate stigma and discrimination in caring for their clients. 5. Outline the effects of stigma and discrimination on HIV response (WLHIV, families, community, nation etc.). 6. Render dignified reproductive care with empathy to WLHIV 	<ol style="list-style-type: none"> 1. Dignity in healthcare 2. Components of dignity in healthcare 3. Stigmatization and discrimination in HIV care 4. Worker empathy 	<ul style="list-style-type: none"> • Nyblade <i>et al.</i>, 2019 • Nyblade <i>et al.</i>, 2009 • Clay <i>et al.</i>, 2017 • Chochinov, 2013 • section five of this thesis
B Communication	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to effectively communicate with their clients for SC education.	After completing the module, HCWs will be able to: <ol style="list-style-type: none"> 1. Outline the types of communication 2. Discuss the importance of non-verbal communication 3. List barriers to effective communication 4. Discuss effective measures of overcoming barriers to effective communication 5. Outline at least four indicators of active listening 	<ol style="list-style-type: none"> 1. Communication defined 2. Communication as process 3. Forms of communication 4. Barriers to effective communication 	<ul style="list-style-type: none"> • Mabuto and Charalambous, 2017 • Akilandeswari <i>et al.</i>, 2015 • Storey <i>et al.</i>, 2014 • Tomori <i>et al.</i>, 2014 • section five of this thesis

Module name	Outcome Objectives	Performance objectives	Lessons of the module	Useful References
		6. Express positive attitude towards HCW-initiated communication		<ul style="list-style-type: none"> University of Minnesota Libraries, 2016)
C Antiretroviral therapy (ART)	After completing this module, HCWs will be able to differentiate among the different antiretroviral treatment courses and their appropriate application in HIV care with at least 50% accuracy.	<p>After completing the module, HCWs will be able to:</p> <ol style="list-style-type: none"> Mention the different classes of drugs available for HIV treatment. List the different antiretroviral treatment courses available for HIV care. Discuss the importance of treatment as prevention in HIV care and prevention (especially SC). Outline the conditions that facilitate the achievement of ‘undetectable = untransmittable’ in persons living with HIV. 	<ol style="list-style-type: none"> Lifecycle of HIV and stages of HIV infection Classes of antiretroviral medication and their modes of infection Treatment as prevention (TaSP) Pre-exposure prophylaxis Undetectable = untransmittable ART and reproduction in women living with HIV. 	<ul style="list-style-type: none"> AIDSinfo Glossary 2018 Meintjes <i>et al.</i>, 2017 GHS, NACP, 2017
D Safer sex in the context of procreation	After completing this module, HCWs will be able to educate reproductive-aged WLHIV on safer sex during SC education with at least 50% accuracy.	<p>After completing the module, HCWs will be able to:</p> <ol style="list-style-type: none"> Define safer sex. Outline strategies that can be adapted to practice safer sex. Discuss safer sex in the context of SC. Discuss situations that can compromise the adoption of safer sex. 	<ol style="list-style-type: none"> Definition of safe sex Safer sex in HIV prevention Strategies of safer sex Safer sex and SC 	<ul style="list-style-type: none"> Canadian AIDS Treatment Information Exchange (CATIE), 2016 Davies <i>et al.</i>, 2018

Module name	Outcome Objectives	Performance objectives	Lessons of the module	Useful References
E Reproductive choices in HIV	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to educate WLHIV on SC strategies.	After completing the module, HCWs will be able to: 1. List the SC strategies available for WLHIV. 2. Discuss adjunct strategies necessary for the effectiveness of SC. 3. Express positive feelings about unnatural SC strategies. 4. Take a WLHIV through education on SC strategies.	1. Serostatus and HIV prevention 2. SC strategies 3. Adjunct to SC strategies	<ul style="list-style-type: none"> • Davies <i>et al.</i>, 2018 • Bekker <i>et al.</i>, 2011 • Mmeje <i>et al.</i>, 2016 • section five of this thesis
F Infertility in women living with HIV	After completing this module, HCWs will be able to assess reproductive-aged women living with HIV for infertility during SC education with at least 50% accuracy.	1. Define infertility 2. Outline the causes of infertility 3. Conduct an infertility assessment for reproductive-aged WLHIV who access care at the facility. 4. Discuss the implications of infertility for WLHIV.	1. Infertility and SC 2. Causes of infertility 3. Treatment of infertility 4. Screening for infertility among women living with HIV	<ul style="list-style-type: none"> • Hess <i>et al.</i>, 2018 • ASRM, 2015 • Etuk, 2009
G HIV status disclosure to a partner	After completing this module, HCWs will acquire at least 50% of the knowledge and skills needed to help WLHIV in disclosing their HIV status to their partners	1. Differentiate between the different types of disclosure. 2. Outline the pros and cons of disclosure and non-disclosure. 3. Discuss the process of disclosure. 4. Demonstrate the preparation of a client for disclosure. 5. Outline the importance of disclosure in the practice of SC	1. Definition of disclosure 2. Disclosure process 3. Types of disclosure 4. Effects of disclosure 5. Preparing a client for disclosure	<ul style="list-style-type: none"> • Maeri <i>et al.</i>, 2016 • Chaudoir <i>et al.</i>, 2011 • Smith, <i>et al.</i>, 2017

(e) Lists and discusses the expectations of the participants for the SCTP. Ask the participants these questions:

- i. Why did you honour the invitation to this programme?
- ii. What do you anticipate gaining at the end of the programme?
- iii. How will lessons learnt in this programme impact your duties at your facilities?

(f) Inform the participants that their input is needed to improve the training hence they will be required to evaluate the programme truthfully at the end of the programme by:

- i. Suggesting ways of improving the programme through answering filling-in questions.
- ii. Taking part in focus-group discussions

(g) Lead the class to establish ground rules to guide the conduct of participants during the programme

- i. on the use of mobile devices – participants are encouraged to switch off the mobile devices or at the least, place them on silence/vibration mode. No phone calls in the classroom etc.
- ii. interactions with one another – e.g., colleagues should not be interrupted amid their submission, only persons called upon by the Trainer should talk, only one person should talk at a time, etc.
- iii. participation in exercises - every participant is expected to take part in the class activities; each group should appoint a representative for presentations etc.

3. Presents an overview of the SCTP to the participants using PowerPoint slides.

(a) Modules A: Dignity-conserving HIV care.

- i. Dignity in healthcare

- ii. Components of dignity in healthcare
- iii. Patients' rights and freedom
- iv. Stigmatization and discrimination in HIV care
- v. Worker empathy

(b) Module B: Communication

- i. Communication
- ii. Communication as a process
- iii. Forms of communication
- iv. Barriers to effective communication

(c) Module C: Antiretroviral Therapy

- i. Lifecycle of HIV and stages of infection
- ii. Classes of antiretroviral medications and their modes of action
- iii. Antiretroviral therapy-based (biomedical) HIV preventive strategies
 - Treatment as preventions (TasP)
 - Pre-exposure prophylaxis and post-exposure prophylaxis (PrEP)
 - Undetectable = Untransmittable
- iv. ART and reproduction in women living HIV (WLHIV)

(d) Module D: Safer sex in the context of procreation

- i. Definition of safe sex
- ii. Safer sex in HIV prevention
- iii. Strategies of safer sex
- iv. Safer sex in the context of SC

(e) Module E: Reproductive choices in HIV

- i. Safe conception defined
- ii. Safe conception strategies
- iii. Adjuncts to SC strategies

(f) Module F: Infertility in women living with HIV

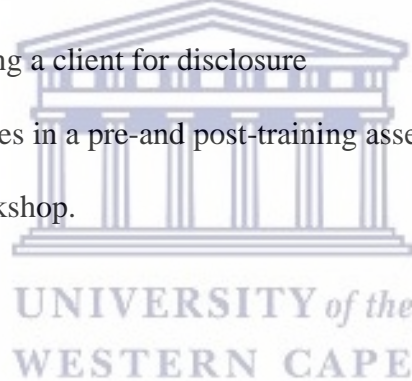
- i. Infertility and SC
- ii. Causes of infertility
- iii. Treatment of infertility
- iv. Screening for infertility among women living with HIV

(g) Module G: HIV status disclosure

- i. Definition of disclosure
- ii. Types of disclosure
- iii. The disclosure processes
- iv. Effects of disclosure and non-disclosure
- v. Preparing a client for disclosure

4. Conducts and participates in a pre-and post-training assessment and also

5. Formerly close the workshop.



CHAPTER ELEVEN: CONCLUSIONS FROM THE STUDY, CONTRIBUTIONS, LIMITATIONS AND RECOMMENDATIONS

11.1 INTRODUCTION

This is the concluding section of the current study which aimed at developing a training programme for healthcare workers in the ART units in the Volta Region of Ghana to facilitate SC education among WLHIV.

11.2 CONCLUSIONS FROM THE STUDY

Women living with HIV, like any other human being have the right to marry and to find a family which include having children (UN General Assembly, 1948). Though society, including the medical community, frowned on childbearing among this population on account of the inherent risks and poor outcomes (Bujan and Pasquier, 2016:919), studies have hitherto documented the phenomenon. The rate of occurrence of this phenomenon is rather increasing (Nattabi *et al.*, 2009:961; Wekesa and Coast, 2014:4; Black *et al.*, 2016:1586). In SSA, heterosexual serodiscordance relationships are known to contribute significantly to new HIV infections (Chemaitelly *et al.*, 2014:6), with the increased risk being documented among partners with fertility desires and intentions (Brubakar *et al.*, 2011:318). With the rising prevalence of reproductive-aged WLHIV whose fertility intentions closely match their uninfected counterparts (Finocchiaro-Kessler *et al.*, (2012:6), the likelihood of childbearing-related HIV incidence is high.

With the advancement in HIV care and availability of risk reduction strategies that enable drastic reduction of the poor outcomes such as vertical and horizontal transmission, fertility-related HIV incidence should no longer hamper HIV prevention efforts (Bujan and Pasquier, 2016:919). However, the unavailability of SC care (that minimises the risk of horizontal

transmission) as a matter of routine to inform WLHIV's fertility decisions in Ghana and other SSA countries is documented (Matthews *et al.*, 2017:5; Davey *et al.*, 2018:4). Thus, though reproductive health services for WLHIV is replete with contraception care than PMTCT and early infant diagnosis, SC is missing creating a gap that needs to be bridged (Mmeje *et al.*, 2015:156). Bridging this gap is important because it makes room for a human-right-based comprehensive reproductive HIV care with both reproductive and contraceptive options for reproductive-aged WLHIV (Mmeje *et al.*, 2015:156).

As Ghana is poised to meet the 2030 target of eliminating HIV as a public health threat (GAC, 2019b:7), there is the need to harness the appropriate and available strategies in addressing the known contextual drivers of the disease. Being among the 22 priority countries with the highest number of pregnant women living with HIV in the world (UNAIDS, 2011:3), Ghana should not concentrate on PMTCT only but also prevention of horizontal transmission to partners of WLHIV. Considering the challenges that are inherent in Ghana's antiretroviral therapy programme which include shortages or inadequacies with ARVs, viral load monitoring machines and other indispensable stocks (GAC, 2016:9; GAC, 2019b:4) practising U = U is not feasible. This calls for the adoption of cheap but effective SC strategies to help WLHIV to conceive safely as their HIV status does not deter them from getting pregnant (Cliffe *et al.*, 2011:1096; Laar, 2015:873; West *et al.*, 2016:4) but this is not so.

There are neither specific policies nor reproductive options for WLHIV who desire to have children (Laar, 2013b:1). The national HIV strategic plans and policies are usually silent on SC as an intervention for HIV prevention (GAC, 2016; GAC, 2019b). Providers admitted to lacking the knowledge and skills necessary for effective SC education and requested training (Laar, 2013b:1) – a motivation for the current study. This study sort to develop a SC training programme for healthcare workers in ART units in the Volta Region of Ghana to facilitate SC education among WLHIV.

This study followed the first four of the six IM steps. Intervention mapping (IM) was adopted as the overarching framework which guided the development of the STCP. In the first step, a quantitative assessment of HCWs' knowledge, attitude, self-efficacy and interest towards SC education was carried out. The findings drew attention to HCWs' inadequate knowledge on the SC and poor attitude towards its education as was depicted in literature. The observed moderate self-efficacy and interest to conduct SC education suggest a need for a redress of the deficit. The above findings were corroborated in an NGT session aimed at eliciting themes for the SCTP. The HIV care experts convened could not list any of the SC strategies when called upon to brainstorm the components of the SCTP. They called for capacity building on current issues in HIV care.

Through a semi-structured interview, the SC needs of WLHIV were explored to get their emic perspectives on the issue to inform an appropriate redress that is end-user-centred. They were found to need the following: confidential and HCW-initiated communication; education on SC strategies; couple-based education on HIV-prevention in childbearing; and health system-driven strategies such as HCW empathy in care, assistance with infertility and continual ARV supply and wellness. These needs were also reported from other studies in the literature. Put together through triangulation, these findings confirmed a need for SC training as well as provide the areas that needed to be covered. The second step of the IM was initiated and completed when objectives were formulated to remediate the deficit in knowledge, attitude and skills for SC education. The outcomes of this step were fed into IM step 3 for the design and development of the SCTP.

Through a workshop, topics were generated to address the objectives set. The researcher used the outcome from that exercise to continue the development of the programme. Bearing in mind the tenets of adult learning, knowledge development in nursing and training programme designing in health, the appropriate interactive delivery methods that facilitate self-directed

learning using previous experiences were selected and mapped onto the topics generated. Reviewed and sequenced, the structure of the SCTP was produced at the end of IM step 3. The SCTP has seven modules viz: *dignity conserving HIV care, communication, antiretroviral therapy, safer sex in the context of procreation, reproductive choices in HIV, infertility in women living with HIV, HIV status disclosure to a partner.*

To test feasibility, acceptability and also refine the training programme developed, a piloting was done at IM step 4 through a two-day training programme for 20 purposively sampled HCWs. The trained HCWs educated some WLHIV on SC after which they were interviewed. Summative evaluation of the piloting was carried out using the CIPP model involving trainers, observers, HCWs and WLHIV as the programme assessors. Both quantitative and qualitative feedback was elicited. All assessors found the SCTP useful and timely.

The feasibility, acceptability and effectiveness of the SCTP were highlighted. Quantitative findings from the piloting indicated improved knowledge, attitude, and self-efficacy among the participants which they confirmed in FGD sessions. Qualitative findings highlight SC programme endorsement by both HCWs and WLHIV as acceptable as well as feasible. The feedback also indicated the need for extension of the duration of the training, insertion of more examples and demonstrations, take-home assignments and exercises to test the understanding of participants. These were implemented and thus, the SCTP was refined for use. The rest of the suggestions such as the inclusion of post-partum HIV care were beyond the scope of this programme.

In conclusion, the research questions posed at the beginning of this study were answered. These questions were:

1. What are the levels of knowledge and self-efficacy among ART unit healthcare workers, for providing SC education for WLHIV?

2. What is the attitude of ART unit healthcare workers towards providing SC education for WLHIV?
3. What are the SC needs of WLHIV attending ART units within the sites?
4. What would be the structure and components of a programme that can be used to train ART unit healthcare workers on SC among WLHIV?
5. How effective and feasible is the training programme developed for ART unit healthcare workers to use for educating WLHIV on SC?
6. What are the strengths and weaknesses of the training programme developed for ART unit healthcare workers to use for educating WLHIV on SC?

The researcher observed low levels of knowledge and poor attitude amidst moderate levels of self-efficacy and interest regarding SC and its education among HCWs. The WLHIV were observed to have SC needs that bore on HCW-initiated fertility communication, SC education, HCW empathy, ARV supply and wellness as well as assistance with disclosure and infertility. The SCTP is a seven-module training programme that can be used in training ART unit healthcare workers on SC among WLHIV. The SCTP is established as an effective and useful tool in improving the knowledge, attitude and self-efficacy of HCWs. However, participants reported that it was too loaded for a two-day training programme. It was adjusted to a four-day programme with some minor fine-tuning as suggested from the feedbacks received upon piloting.

On the whole, this study highlighted that there is demand for SC training and SC education among HCWs and WLHIV respectively, but supply is lacking. This study has also contributed to existing knowledge through the development of a SCTP which was observed to be useful and acceptable to the intended beneficiaries. The feasibility of using the SCTP as a training tool for HCWs is also established. However, there is the urgency for further studies towards meeting these needs holistically.

11.3 CONTRIBUTIONS OF THE STUDY

This study has made some contributions to the field of reproductive healthcare for WLHIV and their partners. One of such contribution is the development of the SCTP that is effective, feasible and acceptable to the intended beneficiaries. This tool will be of benefit to the healthcare workers in the field of reproductive HIV care. It can be used to train them to acquire the necessary knowledge, attitude and skills needed for safe conception education. It can also be adopted for use in training facilities that are involved in the education and training of healthcare providers. It is expected that the use of this tool will facilitate the roll-out of safe conception services, contribute to reduction in peri-conception HIV transmission and acquisition as well as improved quality of life for WLHIV and their partners.

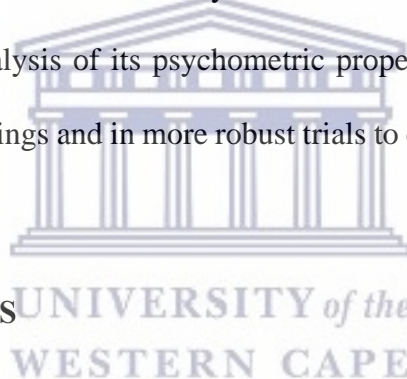
This study has also made contribution to the body of knowledge available on SC. To the best knowledge of the researcher, this study is the first of its kind in the Volta Region. The study revealed some of the challenges of HCWs in relation to SC education of WLHIV. The HCWs had poor knowledge and attitude towards safe conception education which improved after a training intervention with the SCTP. The findings also confirmed the safe conception needs of WLHIV. These observations contribute to the scanty literature available on the subject matter in Ghana. It has also, added to the literature available on the subject matter in Africa and also globally.

Further, this study has also revealed that the quantitative instrument developed by Woldetsadiq *et al.* (2016) in Uganda is applicable in other settings.

11.4 LIMITATIONS OF THE STUDY

The findings of the current study must be interpreted in light of some limitations which are outlined as follows:

1. This study was limited to nurses, midwives and nurse-midwives in 21 traditional ART units of hospitals in the then Volta region (now divided into Volta and Oti Regions) of Ghana. This limits the generalizability of the findings on all nurses, midwives and nurse-midwives in Ghana. To augment for this limitation, the researcher applied data triangulation.
2. Application of the intervention mapping approach is a complex and time-consuming exercise. It requires more personnel with expertise in intervention development as well as funding to add more depth to the training programme. There is the need to replicate its application to varied settings to determine any inherent weaknesses.
3. The quantitative instrument used in this study is new. Its validity and credibility have been established through the analysis of its psychometric properties. However, it needs to be used over time, in other settings and in more robust trials to establish its consistency in real world situations.



11.5 RECOMMENDATIONS

During the course of this study, the researcher observed that the reviews on SC, both at the global and regional levels (SSA), featured no studies from Ghana (Nattabi *et al.*, 2009; Chadwick *et al.*, 2011; MacCarthy *et al.*, 2012; Davey *et al.*, 2018). Previous programmes of work on HIV prevention in Ghana, including the 2016-2020 one featured no explicit plan on SC (GAC, 2016b:26-27). This reveals the relegation of SC to the background and also the dearth of studies on the subject in Ghana. Considering the attention, the other reproductive programmes such as family planning in HIV and PMTCT receive, SC need to be embraced among them to ensure a holistic approach to reproductive health in HIV (Mmeje *et al.*, 2015:156). It will also help to reduce reproductive HIV incidence while WLHIV enjoy their reproductive rights like their uninfected counterparts. To achieve this, there is the need for a wide scope of SC research to guide actions at the level of policymakers, providers, clientele

(such as WLHIV and their significant others) as well as the community. Thus, though the current research has yielded much information on SC training for HCWs, many more areas need to be examined for greater clarity, depth and holistic informed action.

While SCTP has provided an avenue for improving the knowledge, attitude, self-efficacy and skills of HCWs to render SC education, there is the need for further action as per the two-fold recommendations that follow.

11.5.1 Recommendation for practice

There is the need:

4. to include and prioritize SC among HIV prevention and management programmes (as seen in PMTCT for example) and also develop policies and other related significant documents to spell out the implementation guidelines to guide the HCWs in the provision of SC services. Such policies and related guidelines will not only guide HCWs in the provision of SC education but also authenticate SC training for the providers thereby remediating poor knowledge, attitude, self-efficacy on the subject which mitigate SC education.
5. for HCW training on SC before placement at the ART unit is a clear imperative of this study as both the quantitative and the qualitative segments of the study pointed out the poor knowledge base of these providers. The HCWs themselves echoed their helplessness when their clients approached for conversations on reproduction. They expressed their need for and receptivity for SC training just as was identified in literature. The training intervention must stress adequate, effective and empathetic communication that equips HCWs to initiate SC conversation with every reproductive-aged WLHIV as the women are unable to put their need for such dialogue across but wait for the HCWs to do so.

11.5.2 Recommendations for further research

1. The SCTP piloting shows an appreciable increase in HCWs' SC knowledge as well a moderate improvement in attitude and self-efficacy towards SC education after the training programme. However, a decline was seen in their interest to conduct SC education after the training. A further study with more focus on HCW interest in conducting SC education is therefore suggested.
2. Both in the exploration of SC needs and evaluation of SCE, WLHIV expressed the need for couple-based SCE. HCW also raised the topic in their FGD. There is therefore the need for exploration of couple-based SC education as many WLHIV believe it is necessary for their uptake of a strategy. Though the WLHIV indicated their endorsement of HCW-led provision of SC education in the ART unit, it might also help to examine around SC service packaging and delivery with couples. Information on couples' perspectives on what should constitute SC education, where it should be provided, when, how and by whom is crucial for differentiated service delivery. Exploration of couple-based SC education might also lead to an examination of how couples discuss fertility and its decision-making which might inform HCW service delivery. For this to be very successful, it is imperative to investigate the needs of the male partners of the WLHIV (infected or uninfected) towards SC acceptance and uptake.
3. Exploring the cultural acceptability of the SC strategies, especially regarding the so-called 'unnatural' methods such as TVI and assisted reproduction, is also important to inform SC education and marketing.
4. There is a need to explore the most effective ways of delivering SC education. While some of the women communicated their need for individualised sessions, heavy clinic and workloads are likely barriers to such methods of delivery. Hence the need to explore ways of creating a balance that favours both providers and their clientele.

5. During the focus group discussion, HCWs communicated their need for teaching and learning aids to facilitate SC education. The second interview with WLHIV regarding their impression of the SC education they received indicated that they would need repeated explanations to aid their understanding. Thus, modalities for delivering SC education effectively need to be explored to enable the identification and adoption of the most effective strategies.
6. Despite the successful piloting of the SCTP developed which revealed feasibility acceptability and usefulness of the programme, there is the need for a wider and more robust trials even outside the Volta Region and among other HIV care providers to take this work to the next level where it can better inform policy actions.

11.6 CHAPTER SUMMARY

This study achieved its aim which was to develop a SCTP for HCWs in the Volta Region of Ghana. The SCTP was established as an effective, feasible and acceptable training programme which is capable to improving the knowledge, attitude, skills and self-efficacy of HCWs towards safe conception education. These outcomes are crucial inputs in HIV care because they contribute to promoting reproductive options for WLHIV and their partners. By facilitating safe conception among WLHIV and their partners, the SCTP contributes to the zero new HIV infections campaign of the 2030 agenda geared towards ending HIV as a public health problem as outlined in the SDG three.

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APPENDICES

APPENDIX 1 THE ABRIDGED VERSION OF THE REVISED SCTP

Background

Safe conception strategies can prevent peri-conception HIV transmission and acquisition between WLHIV and their partners. HCWs who should inform WLHIV on these strategies do not always have the requisite knowledge, attitude and skill to do so. Moreover, a tool for training the HCWs on this subject is unavailable. An assessment of HCWs' knowledge, attitude, self-efficacy and interest towards safe conception as well as the exploration of the safe conception needs of WLHIV established the areas for the development of a SCTP. Following, is the abridged version of the piloted and fine-tuned SCTP developed for the training of HCWs (see Appendix Table 1).

Aim of the SCTP

The SCTP is aimed at equipping nurses and midwives at the ART units with the knowledge, attitude and skills to deliver safe conception education to women living with HIV who access HIV care at these facilities.

Outline of the SCTP

The SCTP has seven subject areas termed modules which are named alphabetically as A, B, C, ... G. Each module has topics and sub-topics which are sequenced to aid smooth flow of teaching and learning. The SCTP also features training objectives for each module as well as the method of delivery.

Appendix Table 1: A summary of the safe conception training programme (SCTP) modules

Module name	Outcome Objectives	Specific Performance objectives	Lessons of the module	Course content	Method of delivery/ facilitation	Useful References
A. Dignity conserving HIV care	After completing this module, HCWs will acquire at least 50% of the requisite knowledge, attitude and skills to deliver dignified reproductive care to WLHIV in the context of childbearing.	After completing the module, HCWs will be able to: 1. Explain the importance of showing respect to our clients 2. Discuss the components of dignity conserving care. 3. List patient's rights that are closely related to healthcare (knowledge). 4. Limit interactions that demonstrate stigma and discrimination in caring for their clients. 5. Outline the effects of stigma and discrimination on HIV response (WLHIV, families, community, nation etc.). 6. Render dignified reproductive care with empathy to WLHIV	1. Dignity in healthcare 2. Components of dignity in healthcare 3. Stigmatization and discrimination in HIV care 4. Worker empathy	The GHS patient's charter, patients' bill of rights, nursing code of conduct, ethics and legal issues in nursing and midwifery, meeting the self-esteem needs of the client (4 th stage of Maslow's hierarchy of needs), outcomes of dignified and undignified patient care, ethical dilemmas in healthcare, the nurses' pledge, definition of worker empathy, empathy in patient care.	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, • video show and • case studies. 	<ul style="list-style-type: none"> • Nyblade <i>et al.</i>, 2019 • Nyblade <i>et al.</i>, 2009 • Clay <i>et al.</i>, 2017 • Chochinov, 2013 • section five of this thesis

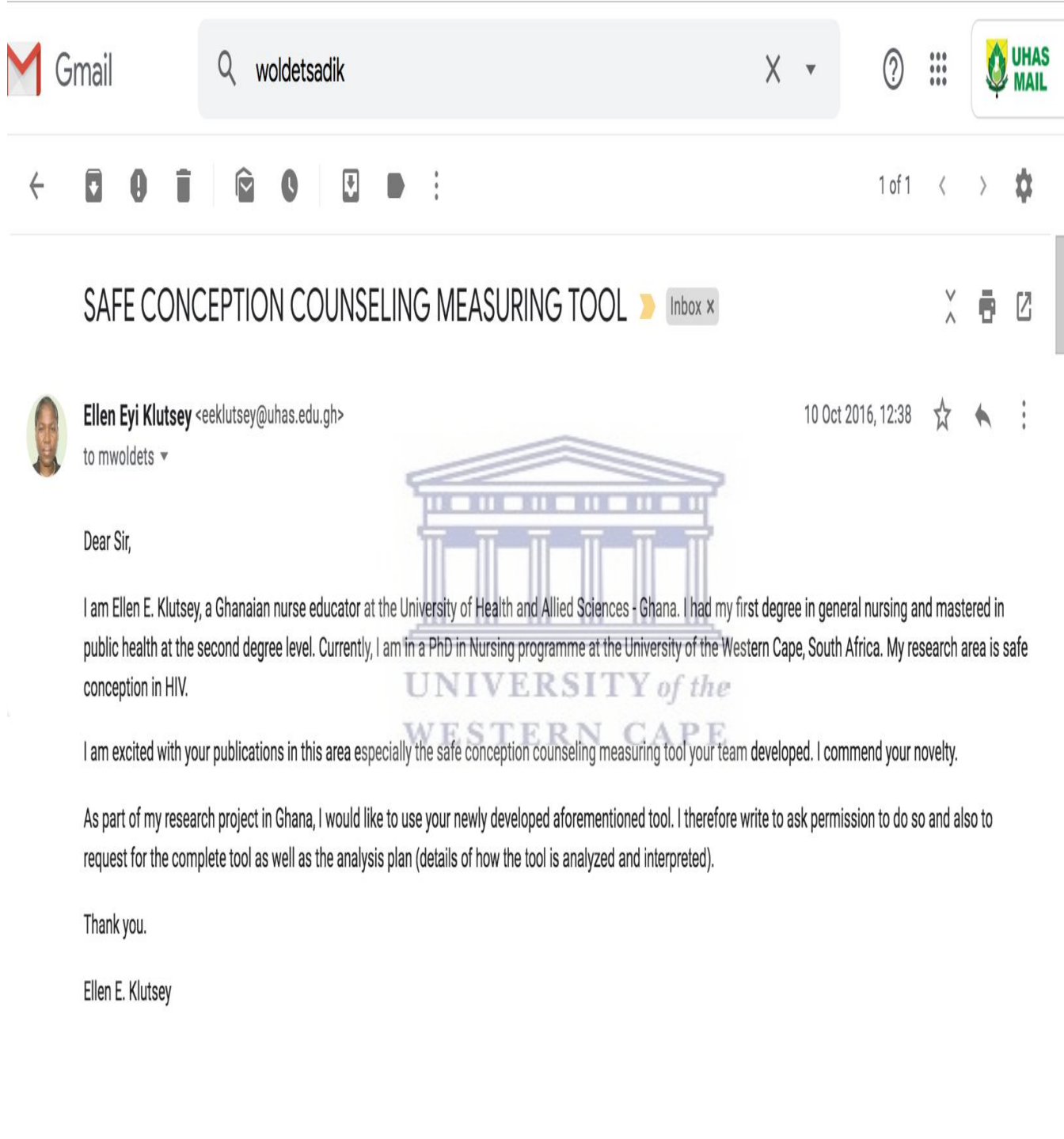
Module name	Outcome Objectives	Specific Performance objectives	Lessons of the module	Course content	Method of delivery/ facilitation	Useful References
B. Communication	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to effectively communicate with their clients for SC education.	After completing the module, HCWs will be able to: 1. Outline the types of communication 2. Discuss the importance of non-verbal communication 3. List barriers to effective communication 4. Discuss effective measures of overcoming barriers to effective communication 5. Outline at least four indicators of active listening 6. Express positive attitude towards HCW-initiated communication	1. Communication defined 2. Communication as process 3. Forms of communication 4. Barriers to effective communication	Types of communication, importance of communication, process of communication, the communication process, interpersonal communication skills e.g., active listening, facilitating, paraphrasing, open and close ended questioning, and blocking responses, Denver Principles of 1983	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, • demonstration • role play 	<ul style="list-style-type: none"> • Mabuto and Charalambo us, 2017 • Akilandeswari <i>et al.</i>, 2015 • Storey <i>et al.</i>, 2014 • Tomori <i>et al.</i>, 2014 • section five of this thesis • University of Minnesota Libraries, (2016)
C. Antiretroviral therapy (ART)	After completing this module, HCWs will be able to differentiate among the	After completing the module, HCWs will be able to: 1. Mention the different classes of drugs available for HIV treatment.	1. Lifecycle of HIV and stages of HIV infection 2. Classes of antiretroviral	The lifecycle of HIV, forms of antiretroviral medications (tablets, injections, patches, vaginal rings etc.), classes of antiretroviral	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, 	<ul style="list-style-type: none"> • AIDSinfo Glossary 2018 • Meintjes <i>et al.</i>, 2017

Module name	Outcome Objectives	Specific Performance objectives	Lessons of the module	Course content	Method of delivery/ facilitation	Useful References
	different antiretroviral treatment courses and their appropriate application in HIV care with at least 50% accuracy.	<ol style="list-style-type: none"> 2. List the different antiretroviral treatment courses available for HIV care. 3. Discuss the importance of treatment as prevention in HIV care and prevention (especially SC). 4. Outline the conditions that facilitate the achievement of 'undetectable = untransmittable' in persons living with HIV. 	<ol style="list-style-type: none"> medication and their modes of infection 3. Treatment as prevention (TaSP) 4. Pre-exposure prophylaxis 5. U = U 6. ART and reproduction in women living with HIV. 	medications, highly active antiretroviral therapy, combination therapy, viral load, viral suppression, pre-exposure prophylaxis, post-exposure prophylaxis, undetectable equals untransmittable,		<ul style="list-style-type: none"> • GHS, NACP, 2017
D. Safer sex in the context of procreation	After completing this module, HCWs will be able to educate reproductive-aged WLHIV on safer sex during SC education with at least 50% accuracy.	After completing the module, HCWs will be able to: <ol style="list-style-type: none"> 1. Define safer sex. 2. Outline strategies that can be adapted to practice safer sex. 3. Discuss safer sex in the context of SC. 4. Discuss situations that can compromise the adoption of safer sex. 	<ol style="list-style-type: none"> 1. Definition of safe sex 2. Safer sex in HIV prevention 3. Strategies of safer sex 4. Safer sex and SC 	definition of safer sex, safer sex strategies: use of condoms, dental dams, ART, PEP and PrEP; sexually transmitted infections, sadism and masochism.	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, 	<ul style="list-style-type: none"> • Canadian AIDS Treatment Information Exchange (CATIE), 2016 • Davies <i>et al.</i>, 2018

Module name	Outcome Objectives	Specific Performance objectives	Lessons of the module	Course content	Method of delivery/ facilitation	Useful References
E. Reproductive choices in HIV	After completing this module, HCWs will acquire at least 50% of the knowledge, attitude and skills needed to educate WLHIV on SC strategies.	After completing the module, HCWs will be able to: 5. List the SC strategies available for WLHIV. 6. Discuss adjunct strategies necessary for the effectiveness of SC. 7. Express positive feelings about unnatural SC strategies. 8. Take a WLHIV through education on SC strategies.	4. Serostatus and HIV prevention 5. SC strategies 6. Adjuncts to SC strategies	HIV serostatuses, timed unprotected intercourse, timed vaginal self-insemination, sperm washing with in-vitro fertilization (intracytoplasmic injection and intra-uterine insemination) voluntary male medical circumcision, treatment of sexually transmitted infections, infertility, the menstrual cycle.	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, • case studies • role play 	<ul style="list-style-type: none"> • Davies <i>et al.</i>, 2018 • Bekker <i>et al.</i>, 2011 • Mmeje <i>et al.</i>, 2016 • section five of this thesis
F. Infertility in women living with HIV	After completing this module, HCWs will be able to assess reproductive-aged women living with HIV for infertility during SC education with at	After completing the module, HCWs will be able to: 1. Define infertility 2. Outline the causes of infertility 3. Conduct an infertility assessment for reproductive-aged WLHIV who access care at the facility.	1. Infertility and SC 2. Causes of infertility 3. Treatment of infertility 4. Screening for infertility among women	definition of infertility, types of infertility, causes of infertility, implication of infertility on the woman,	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, • case studies • role play 	<ul style="list-style-type: none"> • Hess <i>et al.</i>, 2018 • ASRM, 2015 • Etuk, 2009

Module name	Outcome Objectives	Specific Performance objectives	Lessons of the module	Course content	Method of delivery/ facilitation	Useful References
	least 50% accuracy.	4. Discuss the implications of infertility for WLHIV.	living with HIV			
G. HIV status disclosure to a partner	After completing this module, HCWs will acquire at least 50% of the knowledge and skills needed to help WLHIV in disclosing their HIV status to their partners	After completing the module, HCWs will be able to: 1. Differentiate between the different types of disclosure. 2. Outline the pros and cons of disclosure and non-disclosure. 3. Discuss the process of disclosure. 4. Demonstrate the preparation of a client for disclosure. 5. Outline the importance of disclosure in the practice of SC	1. Definition of disclosure 2. Disclosure process 3. Types of disclosure 4. Effects of disclosure 5. Preparing a client for disclosure	definition of disclosure, types of disclosure (full disclosure, partial disclosure, voluntary disclosure, involuntary disclosure), the disclosure process, advantages and disadvantages of disclosure, consequences of disclosure.	<ul style="list-style-type: none"> • lecture through power point presentation, • group discussion, • role play 	<ul style="list-style-type: none"> • Maeri <i>et al.</i>, 2016 • Chaudoir <i>et al.</i>, 2011 • Smith, <i>et al.</i>, 2017


Appendix 2A: Application to use the safe conception psychometric tool



Gmail woldetsadik X ? UHAS MAIL

← [Icons] 1 of 1 < > ⚙

SAFE CONCEPTION COUNSELING MEASURING TOOL > Inbox x

 **Ellen Eyi Klutsey** <eeklutsey@uhas.edu.gh> 10 Oct 2016, 12:38 ☆ ↶ ⋮
to mwoldetsadik

Dear Sir,

I am Ellen E. Klutsey, a Ghanaian nurse educator at the University of Health and Allied Sciences - Ghana. I had my first degree in general nursing and master's in public health at the second degree level. Currently, I am in a PhD in Nursing programme at the University of the Western Cape, South Africa. My research area is safe conception in HIV.

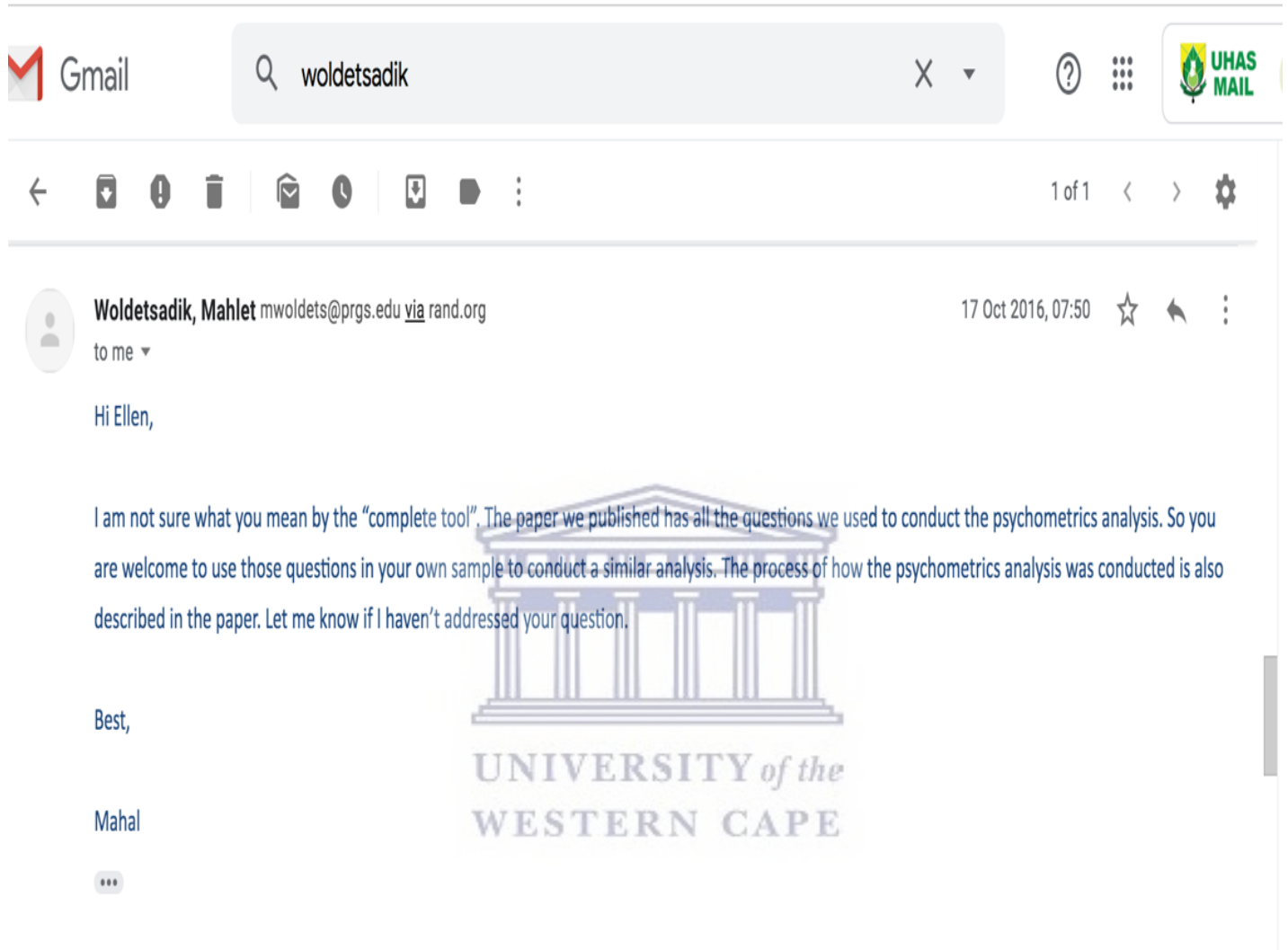
I am excited with your publications in this area especially the safe conception counseling measuring tool your team developed. I commend your novelty.

As part of my research project in Ghana, I would like to use your newly developed aforementioned tool. I therefore write to ask permission to do so and also to request for the complete tool as well as the analysis plan (details of how the tool is analyzed and interpreted).

Thank you.

Ellen E. Klutsey

Appendix 2B: Permission granted to use the safe conception psychometric tool



Appendix 3: The original questionnaire that was adapted

SECTION B				
For questions F1-F5 indicate your opinion by rating the statement from strongly agree to strongly disagree. Make a tick (✓) under the chosen option				
PROVIDERS' QUESTIONS	STRONGLY AGREEE	AGREE	DISAGREE	STRONGLY DISAGREE
F1 Children born to an HIV+ parent face more challenges than are necessary (PS)				
F2 HIV+ people often lack all that they need to bring a child into the world (PS)				
F3 HIV+ people who want to have children are being selfish (PS)				
F4 Helping HIV+ people have children is a distraction from more important issues that we need to address as providers (PS)				
F5 Ensuring patients are always having safe protected sex is more important than helping HIV people to have Children (PS)				
H1 Providing guidance on safer conception to a female client is a waste of time as they won't be able to get their man to agree to modify their sexual practices (PV)				
H2 Providing guidance on safer conception to a female client is a waste of time as their men will demand sex without condom (PV)				
H3 Clients who are counselled to have unprotected or "live" sex during a few days a month when the				

SECTION B

For questions F1-F5 indicate your opinion by rating the statement from strongly agree to strongly disagree. Make a tick (✓) under the chosen option

PROVIDERS' QUESTIONS	STRONGLY AGREEE	AGREE	DISAGREE	STRONGLY DISAGREE
woman is most fertile will not want to resume using condoms afterward (PV)				
H4 Most clients will not follow the advice we give regarding how to increase the safety of conception (I-SCM)				
H5 Most uninfected partners will not take HIV medications daily during the conception period (I-SCM)				
H6 It is not a good use of resources to recommend that uninfected partners take HIV medications daily during the conception period (I-SCM)				



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For questions G1 - G9 indicate your interest in providing Safe Conception education by rating the following statements from 1 (low) to 10 (high). Make a tick (✓) under the chosen option

	1	2	3	4	5	6	7	8	9	10
G1 How interested are you in providing guidance on how to conceive safely to a couple where the woman is living with HIV+ and the man is not? (I-SC)										
G2 How interested are you in providing guidance on how to conceive safely to a couple where the man is HIV+ and the woman is not? (I-SC)										
G3 How interested are you in providing guidance on how to conceive safely to a couple where both partners are HIV +? (I-SC)										

G4 How interested are you in providing guidance to mixed status couple about the use of unprotected or “live” sex only during the few days a month when the woman is most fertile? (I-SCM)										
G5How interested are you in providing guidance to mixed status couples where the woman is HIV+ about how to collect the man’s semen and inject it into the woman’s vagina? (I-SCM)										
G6 If ARVs were approved for such use in Ghana, how interested would you be in providing guidance to uninfected partners of your HIV+ patients about taking ARVs daily during the months they attempt conception via unprotected sex? (I-SCM)										
G7 How interested are you in providing guidance to an HIV-infected woman who wants to conceive, but does not have a committed partner? (I-RF)										
G8 How interested are you in providing guidance to an HIV-infected man who wants to have a child, but does not have a committed partner? (I-RF)										
G9 How interested are you in providing guidance about HIV disclosure to an HIV-infected woman who wants to have a child with an HIV-negative partner, to whom they have not disclosed their HIV status? (I-RF)										
G10 How interested are you in providing guidance to HIV-affected couples who want to conceive if they already have children? (I-RF)										
For questions I1 - I8 indicate your confidence in providing Safe Conception Counseling (SCC) by rating the following statements using a scale of 1 to 10 with 1= not confident at all and 10 = extremely confident. Make a tick (✓) under the chosen option.										

	1	2	3	4	5	6	7	8	9	10
I1 How confident do you feel in your ability to ask clients about their future childbearing goals? (SE-SCC)										
I2 How confident do you feel in your ability to provide safer conception guidance to a couple in which the woman is HIV+ and the man is not? (SE-SCC)										
I3 How confident do you feel in your ability to provide safer conception guidance to a couple in which the man is HIV+ and the woman is not? (SE-SCC)										
I4 How confident do you feel in your ability to provide safer conception guidance to a couple where both the man and the woman are HIV+ (SE-SCC)										
I5 How confident are you that you could provide guidance for early initiation of ART among HIV+ patients with uninfected partners who want to conceive? (SE-SCC)										
I6 If pre-exposure prophylaxis was readily available in Ghana, how confident are you that you could provide guidance to uninfected partners of your HIV+ patients on taking ARVs daily during the months they attempted conception via unprotected sex? (SE-SCC)										
I7 How confident do you feel in your ability to provide guidance to an HIV- infected woman who wants to conceive, but does not have a committed partner? (SE-SCC)										
I8 How confident do you feel in your ability to provide guidance to an HIV- infected man who wants to have a child, but does not have a committed partner? (SE-SCC)										

I9 How confident do you feel in your ability to provide guidance about HIV disclosure to an HIV-infected client who wants to have a child with an HIV-negative partner, to whom they have not disclosed their HIV status? (SE-SCC)									



Appendix 4: The adapted questionnaire used for the quantitative data collection

QUESTIONNAIRE ON HEALTHCARE WORKER SAFE CONCEPTION EDUCATION OF WOMEN LIVING WITH HIV (WLHIV) IN THE VOLTA REGION

Introduction: I kindly ask you to answer the following questions and statements as truthfully as possible. In doing so, you contribute towards the development of a training programme aimed at helping women living with HIV to make informed choices to lessen HIV transmission in the process of conception. Thank you.

I have consented to participate in this study

YES NO

DATE: ____/____/____
Day Month Year

Section A:

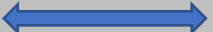
Instruction: Please respond to each of the following questions as truthfully as you can by either ticking [✓] or filling in the blank with the appropriate answer.

Place of work				Department/Unit of work		
Age in years				Rank		
Gender	Male <input type="checkbox"/>	Female <input type="checkbox"/>	Religion	Christianity <input type="checkbox"/>	Islam <input type="checkbox"/>	Traditional <input type="checkbox"/>
Marital Status		Single <input type="checkbox"/>	Married <input type="checkbox"/>	Divorced <input type="checkbox"/>	Co-habiting <input type="checkbox"/>	Widowed <input type="checkbox"/>
Category of Health worker		Auxiliary Nurse/ Midwife <input type="checkbox"/>	Registered Nurse/ Midwife <input type="checkbox"/>	Others specify: _____		
Level of Education		Certificate <input type="checkbox"/>	Diploma <input type="checkbox"/>	First Degree <input type="checkbox"/>	Masters <input type="checkbox"/>	Others, Specify _____
Do you have a relative/friend living with HIV?			Yes <input type="checkbox"/>	No <input type="checkbox"/>	Years of working experience with HIV clients	

Section B

On a scale of 1 – 5 (with 1= lowest; 5=highest), indicate the extent to which you agree with the following statements on safe conception education for women.


Code	Safe Conception Education for Women	Lowest Score	←————→			Highest Score
		1	2	3	4	5
K1	I am aware that child adoption is an option for HIV positive partners who desire to have children.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K2	I am aware of a strategy which reduces the HIV transmission risk associated with conception in HIV positive partners whereby they engage in unprotected sex only in the few days of a month when the woman is most fertile.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K3	I am aware of a strategy in which the man ejaculates into a container or condom and the semen is injected into the woman's vagina at home to reduce the HIV transmission risk associated with conception.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K4	I am aware that the HIV transmission risk associated with the natural means of getting pregnant when one or both partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


Code	Safe Conception Education for Women	Lowest Score  Highest Score				
		1	2	3	4	5
	are HIV positive, can be reduced by using technology to achieve the conception in the hospital.					
K5	I know where to refer clients or HIV affected partners who want to use the methods described in K4 above.	[]	[]	[]	[]	[]
K6	I know of HIV medication(s) that can be taken by a HIV positive partner who wants to conceive with a HIV negative partner to reduce the associated HIV transmission risk.	[]	[]	[]	[]	[]
K7	I know of HIV medication(s) that can be taken by the HIV negative partner who wants to conceive with a HIV positive partner to reduce the associated HIV transmission risk.	[]	[]	[]	[]	[]
K8	I am aware that treatment of sexually transmitted infections (STIs) prior to conception is a HIV risk reduction strategy in partners living with HIV whether one or both are HIV positive.	[]	[]	[]	[]	[]
K9	I know that voluntary medical male circumcision is a HIV transmission risk reduction strategy that can be applied if necessary, when HIV affected partners attempt conception.	[]	[]	[]	[]	[]
K10	I am aware that infertility can increase the risk of HIV transmission to the uninfected partner when mixed status couples attempt conception by natural means.	[]	[]	[]	[]	[]

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Section C


On a scale of 1 – 5 (with 1 = lowest; 5 = highest), indicate the extent to which you agree with the following statements on safe conception education for women living with HIV. Make a tick [✓] in the brackets under the chosen option.

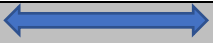
Code	Safe Conception Education for Women Living with HIV	Lowest Score  Highest Score				
		1	2	3	4	5
M1	I feel that HIV positive partners who desire to have children should rather opt for adoption.	[]	[]	[]	[]	[]
M2	I feel positive about educating partners living with HIV to engage in unprotected sex during the few days of the month when the woman is most fertile to enable them conceive.	[]	[]	[]	[]	[]
M3	In situations where the woman is living with HIV, I feel positive about recommending home-insemination to the partners whereby the man ejaculates into a condom or a container and the semen is then injected into the woman's vagina to enable her to conceive.	[]	[]	[]	[]	[]
M4	I feel positive about educating HIV affected partners who desire to have children on available technology assisted conception whether one or both partners are HIV positive.	[]	[]	[]	[]	[]

Code	Safe Conception Education for Women Living with HIV					
		Lowest Score				Highest Score
		1	2	3	4	5
M5	I agree that the referral facilities for technology assisted conception should be communicated to partners who desire to have children whether one or both partners are HIV positive.	[]	[]	[]	[]	[]
M6	I agree that HIV medication(s) should be taken by a HIV positive partner who wants to conceive with a HIV negative partner to reduce the associated HIV transmission risk.	[]	[]	[]	[]	[]
M7	I agree that HIV medication(s) should be taken by a HIV negative partner who wants to conceive with a HIV positive partner to reduce the associated HIV transmission risk.	[]	[]	[]	[]	[]
M8	I agree that sexually transmitted infections (STIs) should be treated prior to conception as a HIV risk reduction strategy in partners whether one or both partners are HIV positive.	[]	[]	[]	[]	[]
M9	I feel positive about recommending voluntary medical male circumcision to a HIV affected couple desiring a child where the male is HIV negative and uncircumcised.	[]	[]	[]	[]	[]
M10	I agree that treatment of infertility can decrease the risk of HIV transmission to the uninfected partner while mixed status couples attempt conception.	[]	[]	[]	[]	[]
M11	I am positive that my colleagues in the health facility (hospital) where I work, would like me to educate people living with HIV on safe conception strategies.	[]	[]	[]	[]	[]
M12	I am positive that the managers of the health facility (hospital) I work in would like me to educate people living with HIV on safe conception strategies.	[]	[]	[]	[]	[]

Section D


On a scale of 1 – 5 (with 1= lowest; 5 = highest), indicate your interest in providing safe conception education to women living with HIV. Make a tick [✓] in the brackets under the chosen option.

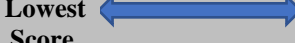
Code	Interest in Providing Safe Conception Education for Women with HIV					
		Lowest Score				Highest Score
		1	2	3	4	5
I1	I am interested in providing child adoption education as an option for HIV positive partners who desire to have children.	[]	[]	[]	[]	[]
I2	I am interested in educating HIV positive partners to engage in unprotected sex during the few days of the month when the woman is most fertile to enable them conceive.	[]	[]	[]	[]	[]
I3	In situations where the woman is living with HIV, I am interested in teaching the partners home-insemination whereby the man ejaculates into a condom or a container and the semen is injected into the woman's vagina to enable her to conceive.	[]	[]	[]	[]	[]

Code	Interest in Providing Safe Conception Education for Women with HIV	Lowest Score  Highest Score				
		1	2	3	4	5
I4	I am interested in educating HIV affected partners who desire to have children on available technology for assisted conception whether one or both partners are HIV positive.	[]	[]	[]	[]	[]
I5	I am interested in helping partners who desire to have children, but one or both partners are HIV positive, to locate the referral facilities for technology assisted conception.	[]	[]	[]	[]	[]
I6	I am interested in educating a HIV positive partner who wants to conceive with a HIV negative partner on taking HIV medications to reduce the risk of HIV transmission.	[]	[]	[]	[]	[]
I7	I am interested in educating a HIV negative partner who wants to conceive with a HIV positive partner on taking HIV medication(s) to reduce the risk of HIV transmission.	[]	[]	[]	[]	[]
I8	I am interested in screening and treatment of sexually transmitted infections (STIs) prior to conception as a HIV risk reduction strategy in partners whether one or both partners are HIV positive.	[]	[]	[]	[]	[]
I9	I am interested in discussing voluntary medical male circumcision with HIV affected partners desiring a child where the male is HIV negative and uncircumcised.	[]	[]	[]	[]	[]
I10	I am interested in screening for infertility prior to conception as a HIV risk reduction strategy in a couple where one or both partners are HIV positive.	[]	[]	[]	[]	[]

Section E: HIV Preventive Skills in Safe Education Conception (Perceived ability to provide safe conception)

On a scale of 1 – 5 (with 1= lowest; 5=highest), indicate your confidence level in providing safe conception education to women living with HIV. Make a tick (✓) in the brackets under the chosen option.

Code	Confidence Level in Providing Safe Conception Education to Women Living with HIV	Lowest Score  Highest Score				
		1	2	3	4	5
C1	I am confident about my ability to educate HIV positive partners who desire to have a child on adoption as an option.	[]	[]	[]	[]	[]
C2	I am confident I have the requisite knowledge and skills to educate the child desiring partners who are living with HIV on how to engage in unprotected sex during the few days of the month when the woman is most fertile to enable them conceive.	[]	[]	[]	[]	[]
C3	In situations where the woman is HIV positive, I am confident of my ability to educate the partners on home-insemination whereby the man ejaculates into a condom or a container and the semen is injected into the woman's vagina to enable her conceive.	[]	[]	[]	[]	[]

Code	Confidence Level in Providing Safe Conception Education to Women Living with HIV					
		Lowest Score				Highest Score
		1	2	3	4	5
C4	I am confident about my ability to educate HIV affected partners who desire to have children on technology assisted conception whether one or both partners are HIV positive.	[]	[]	[]	[]	[]
C5	I am confident of my ability to effectively link up HIV affected partners to referral facilities for technology assisted conception whether one or both partners are positive.	[]	[]	[]	[]	[]
C6	I am confident of my ability to provide the needed education for early initiation of antiretrovirals among HIV positive clients with uninfected partners who want to conceive.	[]	[]	[]	[]	[]
C7	I am confident I could provide health education to uninfected partners of my HIV positive patients on taking antiretrovirals daily during the months they attempt conception via unprotected sex.	[]	[]	[]	[]	[]
C8	I am confident of my ability to provide STI education and screening prior to safe conception education for a HIV affected partner who desire to have a child whether one or both of them are HIV positive.	[]	[]	[]	[]	[]
C9	I am confident I can provide education on voluntary medical male circumcision to HIV affected partners desiring a child where the male is HIV negative and uncircumcised.	[]	[]	[]	[]	[]
C10	I am confident of my ability to provide infertility education and screening for HIV affected partners prior to safe conception education.	[]	[]	[]	[]	[]

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THANK YOU FOR PARTICIPATING

Appendix 5A: Ethical clearance from the University of the Western Cape



OFFICE OF THE DIRECTOR: RESEARCH RESEARCH AND INNOVATION DIVISION

Private Bag X17, Bellville 7535
South Africa
T: +27 21 959 2988/2948
F: +27 21 959 3170
E: research-ethics@uwc.ac.za
www.uwc.ac.za

05 October 2017

Ms EE Klutsey
School of Nursing
Faculty of Natural Sciences

Ethics Reference Number: BM17/6/10

Project Title: Development of a safe conception training programme for health care workers in antiretroviral therapy units in the Volta Region, Ghana.

Approval Period: 05 October 2017 – 05 October 2018

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in blue ink, appearing to read 'Josias'.

*Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape*

PROVISIONAL REC NUMBER -130416-050

Appendix 5B: Renewed ethical clearance from the University of the Western Cape



OFFICE OF THE DIRECTOR: RESEARCH RESEARCH AND INNOVATION DIVISION

Private Bag X17, Bellville 7535
South Africa
T: +27 21 959 4111/2948
F: +27 21 959 3170
E: research-ethics@uwc.ac.za
www.uwc.ac.za

06 May 2019

Ms EE Klutsey
School of Nursing
Faculty of Community and Health Sciences

Ethics Reference Number: BM17/6/10

Project Title: Development of a safe conception training programme for health care workers in antiretroviral therapy units in the Volta Region, Ghana.

Approval Period: 17 April 2019 – 17 April 2020

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in black ink, appearing to read 'Patricia Josias'.

*Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape*


BMREC REGISTRATION NUMBER -130416-050

FROM HOPE TO ACTION THROUGH KNOWLEDGE.

Appendix 6: Ethical clearance from the Ghana Health Service

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.



One Health One Future

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax + 233-302-685424
Email: ghserc@gmail.com
9th February, 2018

MyRef. GHS/RDD/ERC/Admin/App/881
Your Ref. No.

Ellen Eyi Klutsey
University of the Western Cape
Faculty of Community and Health Sciences

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	GHS-ERC: 001/11/17
Project Title	Developing of a Safe Conception Training Programme for Health Care Workers in Antiretroviral Therapy Units in the Volta Region, Ghana
Approval Date	8 th February, 2018
Expiry Date	7 th February, 2019
GHS-ERC Decision	Approved

This approval requires the following from the Principal Investigator

- Submission of yearly progress reports of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

Appendix 7: Introductory letter from the Volta Regional Health Directorate

In case of reply the number and the date of this letter should be quoted

My Ref No. VRHD/ORD/46

Your Ref. No.....

OUR GHS CORE VALUES

- PEOPLE-CENTRED SERVICES
- PROFESSIONALISM
- TEAM WORK
- INNOVATION/EXCELLENCE
- DISCIPLINE
- INTEGRITY



Volta Regional Health Directorate
GHANA HEALTH SERVICE
P. O. BOX 72
HO, V/R.
Tel: (036) 2028210
Fax : (036) 2028244

volta-health@4u.com.gh

26th March, 2018

**THE DEPUTY DIRECTOR (PUBLIC HEALTH)
VOLTA REGIONAL HEALTH DIRECTORATE
HO**

RE: INTRODUCTORY LETTER – MS. ELLEN EYI KLUTSE

I write to introduce to you Ms. Ellen Eyi Klutse, a staff of the University of Health and Allied Sciences, who has expressed interest to conduct a study at the VRHD.

The focus of her study is "*Development of a safe conception training Programme for healthcare workers in antiretroviral therapy units in the Volta Region, Ghana.*"

I will be grateful if you could accord her the necessary assistance to enable her conduct the study successfully.

Attached is a copy of an Ethical Clearance from the Ghana Health Service Ethics Review Committee.

Thank you.

**[MR. EDWARD KABA]
DEPUTY DIRECTOR [ADMINISTRATION]
FOR: REG. DIRECTOR OF HEALTH SERVICES
VOLTA REGION**

GA/JAM

Appendix 8A: Information sheet for women living with HIV (English)



UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

INFORMATION SHEET FOR WOMEN LIVING WITH HIV (ENGLISH)

Project Title: DEVELOPMENT OF A SAFE CONCEPTION TRAINING PROGRAMME FOR HEALTHCARE WORKERS IN ANTIRETROVIRAL THERAPY UNITS IN THE VOLTA REGION, GHANA.

What is this study about?

This is a research project being conducted by **Ellen Eyi Klutsey** at the University of the Western Cape. We are inviting you to participate in this research project because the information you will provide will be relevant to the development of a useful training programme for healthcare workers in the antiretroviral therapy units. It is expected that the training programme will facilitate safe conception in women living with HIV. Thus, it will prevent HIV transmission to their partner in the process of attempting pregnancy. The purpose of this research project is to develop a training programme for healthcare workers in the antiretroviral therapy units in the Volta Region of Ghana to facilitate safe conception among WLHIV.

What will I be asked to do if I agree to participate?

If you consent to participate in this study, you will be asked to complete a consent form either by signing or thumb printing. Then you will be requested to answer some questions on your childbearing needs which will be recorded. This may last for about 30 - 45 minutes. This interview will be audiotaped to help keep record of your views and also to facilitate accurate transcription of them.

Would my participation in this study be kept confidential?

The researcher will take security measures to ensure confidentiality. No identifying information will be put on interview guide or the transcribed data. Thus, your name will not be included in the

data collected or datasets created. Instead, numerals and letters of the alphabet will be used. This will ensure that, apart from the researcher, no one else would be able to link the data to you. To ensure your confidentiality, hard copies of data collected will be stored in filing cabinets under lock accessible only to the researcher. Soft copies of data will be stored on computers and storage drives with password that only the researcher have access to. Likewise, the research report will be devoid of identifying information that can be linked to you. The data collected will be stored for at least five (5) years after which they might be destroyed. In this regard, hard copies of data will be shredded for recycling while soft copies will be permanently deleted from the storage devices.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimize such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. You are therefore encouraged to inform me should you have any such discomfort. Where necessary, referral will be made to the Psychiatric Unit of the hospital for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the safe conception needs of women living with HIV. We hope that, in the future, the training programme developed will be used to improve healthcare workers knowledge and skills to deliver accurate education to women living HIV on safe conception and hence contribute to HIV prevention.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

What if I have questions?

This research is being conducted by Ellen Eyi Klutsey at the University of the Western Cape. If you have any questions about the research study itself, please contact Ellen Eyi Klutsey at the University of health and allied science, PMB 31, HO or through +233201636016 and

elleneyi@yahoo.com. Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Prof J. A. Chipps

Acting Director: School of Nursing

University of the Western Cape

Private Bag X17

Bellville 7535

jchipps@uwc.ac.za

OR

Prof Rina Swart

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

Private Bag X17

Bellville 7535

chs-deansoffice@uwc.ac.za



Appendix 8A1: Information sheet for women living with HIV (Ewe)



UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

INFORMATION SHEET FOR WOMEN LIVING WITH HIV (EWE)

KAKLĀNAGBALĒ

TANYA: FUFƆƆ DEDIE FE ĐOĐOWƆƆ NA LĀMESEDƆƆLAWO SIWO KPƆA ĐIKANAKU ĐƆLĒLAWO DZI FE HEHE LE AMUGĀ NUTOAME LE GHANA.

Nuka ñue numekuku sia ku ɔɔ?

Esia nye numekuku aɔe si **Ellen Eyi Klutsey** si le Western Cape Sukukɔkɔ me la le wɔwɔm. Miele amewo kpem be woakpɔ gome le numekuku sia me elabena nya alo susu siwo miagblɔ la anɔ vevie alo ahia be miafe dɔwɔfe nawɔ ɔɔɔ aha fia nu eye woahe lāmesedɔwɔlawo siwo kpɔa ɔikanaku ɔlɔlɔlawo fe atikexɔɔ kple nuxlɔame la. Miekpɔ mɔ be amehhe sia ana be nyɔnu siwo ñu ɔikanaku le la atɛɛu aɔ fu kuximanɔmee, woanɔ dedie eye wosrɔwo kple vi siwo woadzi la hã maxɔ esiawo wɔwɔ me o.

Numekuku sia fe taɔɔzinu koe nye be woawɔ amehhe ɔɔɔwo hena lāmesedɔwɔlawo siwo kpɔa ɔinakudɔlɔlɔlawo fe atikexɔɔ kple nuxɔxlɔ dzi le Amu nutoame le Ghana. Esia ena be nyɔnu siwo ñu ɔa le la atɛɛu aɔ fu bɔbɔe.

Nukae woabiam ne melɔ be makpɔ gome?

Ne elɔ be yeakpɔ gome le nusɔsrɔ sia me la, woabia be tso asiwo be nade asi alo naɔe asi ɔe lɔlɔ be yeakpɔ gome agbalɔ te. Emegbe woabia wo biabia aɔewo ku ɔe wo vidzidzi hiahiãwo ñu si woale de mɔ dzi. Esia axɔ be miniti blaetɔ tso yi blaene vɔ atɔ ene.

De woayla nye gomekpɔkɔ le numekukua sia mea?

Nugɔmekula akpɔ egbɔ be egbɔ be yewɔ ɔɔɔ be yeayla gomekpɔlawo ɔe ñkɔwo kple susu siwo woɔe gblɔ la. Womabia amenudede adeke ɔe nusɔsrɔgbalɔa dzi o ke boɛ woazã ñɔɛlɔdzewo kple dzesi bubuwo. Esia ana ame bubu aɔe mado ka wo

kple wò ñuḍoḍo aḍeke o. Woatu nusḱsrḱgbalḱawo ḍe aḍaka me eye esiwo le mḱwo dzi la, woatre wonu. Esia ana be nugḱmekula *fe* si koe atenju aka wo. Nenemake hḱ womayḱ ame aḍeke ḱkḱ le nutsotso si ado la me o si woatso ado ka ame aḍeke o.

Nukpekeame kawoe anḱ numekukua me?

Nukpekeame aḍe kloḱ nḱa amegbetḱ *fe* kadodo kple dzeḍoḍowo me. Miakpḱ egbḱ be nukpekeame mawo aḍiḍi alo manḱ anyi kura o eye miakpe ḍe ḱuwo nenyḱ be dzimadeḍi alo nukpekeame aḍe ado mo ḍa le numekukua wḱwḱ me. Eyata atenju ana manya ne dzimadeḍi aḍe ava to biabiawo alo wo ḱuḍoḍo me. Ne ahiḱ la, miana nakpḱ ame xḱ hehe aḍe hena kpekpeḱu.

Nunyoname kawoe anḱ numekukua me?

Mietrḱ asi le numekuku sia nu be woakpe ḍe ḱuwo abe ame ḍeka ene gake numetsotsowo ana be nugḱmekula nanya nu tso vidzidzi hiahia si le nyḱnu siwo le ḍikanaku ḍḱ lem la ḱuti. Miekpḱ mḱ be, le *fe* siwo ava mea, woawḱ amehhe wḱnawo be woatsḱ do lḱmesedḱlawo *fe* nunya ḍe ḱugḱ be woatenju afia nu nyḱnu siwo nu dikanakudḱ le be woatenju afḱ fu kuxi manḱmee eye wo srḱwo maxḱ ḍḱlélea o.

Ne melḱ be makpḱ gome le numekukua mea, ḍe mateḱu atḱ le yeyiḱ ḍesiade mea?

Wḱ gomekpḱkpḱ anye wḱ ḱutḱ wḱ tamedḱḱo kple wo tiatia. Àtenju atia hḱ be yemakpḱ gome o. Ne èlḱ be yeakpḱ gome la, àtenju adzudzḱ yeyiḱ ḍesiade. Ne èbe yemakpḱ gome o alo èdze egḱme hafi tḱ la, ame aḍeke mahe to na wḱ alo awḱ naneke nawḱ o eye mabu gomekpḱkpḱ si nḱdze na la hḱ o.

Nukae mawḱ ne biabia aḍe le asinye?

Amesi nugḱmekuku sia wḱm lae nye **ELLEN EYI KLUTSEY** le University of the Western Cape. Ne biabia aḍe le asiwo ku ḍe numekukua ḱutḱ nu la, ekema yḱ **ELLEN EYI KLUTSEY** le **UNIVERSITY OF HEALTH AND ALLIED SCIENCES, PMB 31, HO** alo to kafodzesi siawo dzi: +233201636016 kple elleneyi@yahoo.com. Ke ne biabia ḍe le asiwo, alo nekpḱ kuxia abe gomekpḱla le numekukua me ene la, ekema nayḱ:

Ms. Hannah Frimpong
GHS-ERC Administrator
Office: +233 302 681109
Mobile: 233 (0) 243235225 or 0507041223
Email: Hannah.Frimpong@ghsmail.org

Prof. J.A Chipps
Acting Director: School of Nursing
University of the Western Cape
Private Bag X17
Bellville 7535
jchipps@wuc.ac.za

ALO



Prof Rina Swart
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17
Bellville 7535
Chs-deanoffice@wuc.ac.za

Appendix 8B: Informed consent form for Women living with HIV in English



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

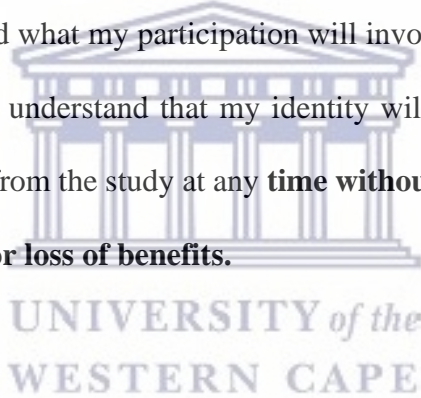
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

CONSENT FORM FOR WOMEN LIVING WITH HEALTH (ENGLISH)

Title of Research Project: Development of a safe conception training programme for healthcare workers in antiretroviral therapy units in the Volta region, Ghana.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any **time without giving a reason and without fear of negative consequences or loss of benefits.**



Participant's name.....

Participant's signature.....

Date.....

Appendix 8B1: Informed consent form for women living with HIV (Ewe)



UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: ellenevi@yanoo.com

CONSENT FORM FOR WOMEN LIVING WITH HEALTH (EWE)

KAKLĀNAGBALĒ

TANYA: FUFŌFŌ DEDIE FE ƉOƉOWŌWŌ NA LĀMESEDŌWŌLAWO SIWO KPŌA ƉIKANAKU ƉŌLĒLAWO DZI FE HEHE LE AMU NUTOAME LE GHANA.

WoƉe numekuku sia gŏme nam Ɖe gbe si gŏme mese la me. WoƉo biabia siwo katā le asinye ku Ɖe numekuku sia ņu nam. Mese nu si nye gomekŏkpŏ ahiā eye melŏ be makpŏ gome le eme le nye lŏlŏnu me. Mese egŏme be womaƉe ņunye alo ayŏ nye ņkŏ na ame aƉeke o. Mega se egŏme be mateņu aƉe asi be nyemaga kpŏ gome le numekukua me o le ņeyiyi Ɖesiade eye womazi dzinye be magblŏ susu si tae o. Vŏvŏ aƉeke hā manŏ anyi be fetu vŏ aƉeke ava dzinye le esiata o.

[] Melŏ be woale nye gbe Ɖe mŏdzi nenye be ehia nenema.

Dkeke:..... AsiƉeƉe:.....

Ne gomekpŏla mateņu axlĒ nuņlŏņlŏsa o la, ekema nutefekpŏla nadeasi agbalĒa te Ɖe afisia:

Menŏ etefe hafi wo Ɖe nume na gomekpŏla ku Ɖe numekuku sia ‘fufŏfŏ dedie fe ƉoƉowŏwŏ na lāmesedŏwŏlawo siwo kpŏa Ɖikanaku ƉlĒlĒawo dzi fe hehe le amu nutoame le Ghana’ ņu. Wo Ɖe nume nĒ ku Ɖe numekukua fe nuvānyenye, efe etaƉonu kple efe wŏfe abe gomekpŏla enea ņuti. WoƉo efe biabiawo ha ņuti nĒ abe

alesi dze la ene. Le esiawo kata megbe la, gomekpola sia lã dzizizimanome be yeano numekuakua me.

[] Gomekpola sia lã hã be woale yefe gbe de modzi nenye be ehia nenema.

Dkeke:..... Nutefekpola fe asidede:.....

Medi adasi be, wo de nume na gomekpola ku de numekuku sia nu. Wo de nume ne ku de numekukua fe nuvanyenye, efe etadonu kple efe wofe abe gomekpola enea nuti. Wofo efe biabiawo ha nuti ne abe alesi dze la ene. Le esiawo kata megbe la, gomekpola sia lã dzizizimanome be yeano numekuakua me.

Dkeke:..... Nugomekula fe asidede:.....

Ne biabia bubu afe le asiwo la ekema yo numekukula nuti le kafodzesi sia dzi 0201636016



This research has been approved by the Biomedical Science Research Ethics Committee of the University of the Western Cape

(REFERENCE NUMBER: BM17/6/10)

Appendix 8C: Information sheet for healthcare workers



UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

INFORMATION SHEET (HEALTHCARE WORKERS)

PROJECT TITLE: DEVELOPMENT OF A SAFE CONCEPTION TRAINING PROGRAMME FOR HEALTHCARE WORKERS IN ANTIRETROVIRAL THERAPY UNITS IN THE VOLTA REGION, GHANA.

What is this study about?

This is a research project being conducted by **ELLEN EYI KLUTSEY** at the University of the Western Cape. We are inviting you to participate in this research project because you can provide relevant information related to pregnancy in women living with HIV. **The purpose of this research project is to develop a training programme for healthcare workers in the antiretroviral therapy units in the Volta Region of Ghana to facilitate safe conception among women living with HIV.**

What will I be asked to do if I agree to participate?

If you consent to participate in this study, you will be required to fill an informed consent form. Then you will complete a questionnaire (pretest) which should take about 20 – 30 minutes. About three months later, you may be requested to participate in a day's workshop where you will be trained on educating women living with HIV on safe conception in a pilot. You will also be requested to evaluate the training individually by summarizing your experiences in writing. You will also take part in a discussion with other participants on your experiences with the training programme. The discussion will be audiotaped to help keep record of your views and also to facilitate accurate transcription of them. This discussion session will not last beyond two hours.

You will be asked to complete a questionnaire for the second time (posttest) which will also last about 20 -30 minutes.

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. The survey is anonymous and will not contain information that may personally identify you. Thus, your name will not be included on the survey and other collected data or datasets created; only codes will be used. A code will be placed on the survey and other collected data through the use of an identification key which will enable the researcher to link your survey to your identity. Only the researcher will have access to the identification key. To ensure your confidentiality, hard copies of data collected will be stored in filing cabinets under lock. Soft copies of data will be stored on computers and storage drives with password that only the researcher have access to. Likewise, the research report will be devoid of identifying information that can be linked to you. The data collected will be stored for at least five (5) years after which they might be destroyed. In this regard, hard copies of data will be shredded for recycling while soft copies will be permanently deleted from the storage devices

This study will also use focus groups. Therefore, the extent to which your identity will remain confidential is dependent on participants' in the Focus Group maintaining confidentiality.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimize such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. You are therefore encouraged to inform me should you have any such discomfort. Where necessary, an appropriate referral will be made to the Psychiatric Unit of the hospital for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the safe conception needs of women living with HIV. We hope that, in the future, the training programme developed will be used to improve healthcare workers knowledge and skills

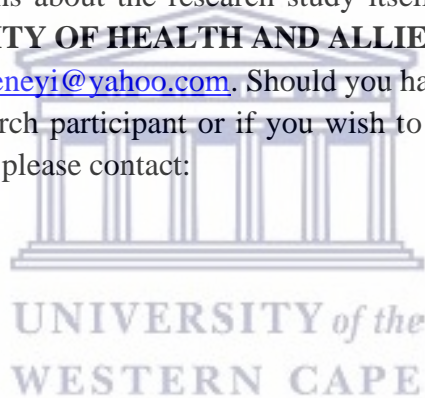
to deliver accurate education to women living HIV on safe conception and hence contribute to HIV prevention.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

What if I have questions?

This research is being conducted by **ELLEN EYI KLUTSEY** at the University of the Western Cape. If you have any questions about the research study itself, please contact **ELLEN EYI KLUTSEY** at **THE UNIVERSITY OF HEALTH AND ALLIED SCIENCE, PMB 31, HO** or through +**233201636016** and elleneyi@yahoo.com. Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:



Ms. Hannah Frimpong
GHS-ERC Administrator
Office: +233 302 681109
Mobile: +233 243235225 or 0507041223
Email: Hannah.Frimpong@ghsmail.org

OR

Prof J. A. Chipps
Acting Director: School of Nursing
University of the Western Cape
Private Bag X17
Bellville 7535
jchipps@uwc.ac.za

OR

Prof Rina Swart
Dean of the Faculty of Community and Health Sciences
University of the Western Cape
Private Bag X17 - Bellville 7535
chs-deansoffice@uwc.ac.za



Appendix 8D: Informed consent for healthcare workers



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

CONSENT FORM

PROJECT TITLE: DEVELOPMENT OF A SAFE CONCEPTION TRAINING PROGRAMME FOR HEALTHCARE WORKERS IN ANTIRETROVIRAL THERAPY UNITS IN THE VOLTA REGION, GHANA.

I have read the foregoing information, or it has been read to me in a language I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences such as loss of benefits or medical care. I agree to participate in the study as volunteer.

I agree to be tape recorded if necessary

Date Participant's signature/ thumbprint

If a participant cannot read the form themselves, a witness must sign here

I was present while the information on the study '**Development of a safe conception training programme for healthcare workers in antiretroviral therapy units in the Volta Region, Ghana**' was read and explained to the volunteer regarding the nature, purpose and procedures in the language she understands. Her questions were satisfactorily answered and the volunteer agreed to participate in the research.

The volunteer agreed to be tape recorded if necessary.

Date Witness' signature

I certify that the purpose, nature and procedures as well as the possible risks associated with taking part in this study have been explained to the above volunteer before she signed the consent form.

Date Signature of the one obtaining the consent

For further enquiry about the research, please contact the Principal Investigator on 0201636016

This research has been approved by the University of the Biomedical Science Research Ethics Committee of the University of the Western Cape (REFERENCE NUMBER: BM17/6/10)



Appendix 9A: Multicollinearity results with self-efficacy (C) as DV

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	M, K ^b		Enter

a. Dependent Variable: C

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.389 ^a	0.151	0.133		0.91202

a. Predictors: (Constant), M, K

b. Dependent Variable: C

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.504	2	6.752	8.118	.001 ^b
	Residual	75.692	91	0.832		
	Total	89.196	93			

a. Dependent Variable: C

b. Predictors: (Constant), M, K

Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.370	0.246		9.650	0.000		
	K	0.240	0.100	0.252	2.402	0.018	0.846	1.182
	M	0.152	0.075	0.214	2.034	0.045	0.846	1.182

a. Dependent Variable: C

Collinearity Diagnostics^a

Model		Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	K	M
1	1	2.766	1.000	0.02	0.02	0.02
	2	0.146	4.356	0.19	0.14	0.97
	3	0.088	5.602	0.79	0.84	0.00

a. Dependent Variable: C

Appendix 9B: Multicollinearity results with interest (I) as DV

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	M, K ^b		Enter

a. Dependent Variable: I

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.566 ^a	0.320	0.305		0.81388

a. Predictors: (Constant), M, K

b. Dependent Variable: I

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.380	2	14.190	21.422	.000 ^b
	Residual	60.278	91	0.662		
	Total	88.658	93			

a. Dependent Variable: I

b. Predictors: (Constant), M, K

Coefficients^a

Model		Unstandardised Coefficients		Standardised Coefficients		Collinearity Statistics		
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.645	0.219		7.508	0.000		
	K	0.355	0.089	0.375	3.989	0.000	0.846	1.182
	M	0.214	0.067	0.302	3.210	0.002	0.846	1.182

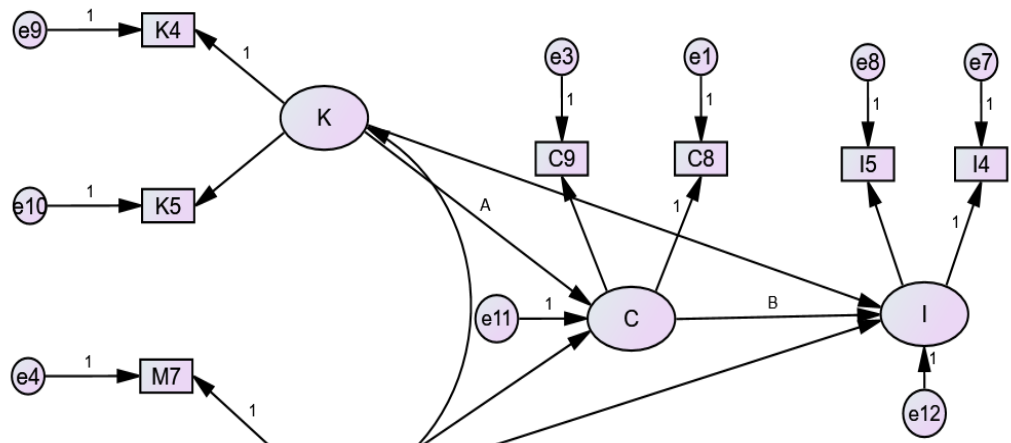
a. Dependent Variable: I

Collinearity Diagnostics^a

Model		Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	K	M
1	1	2.766	1.000	0.02	0.02	0.02
	2	0.146	4.356	0.19	0.14	0.97
	3	0.088	5.602	0.79	0.84	0.00

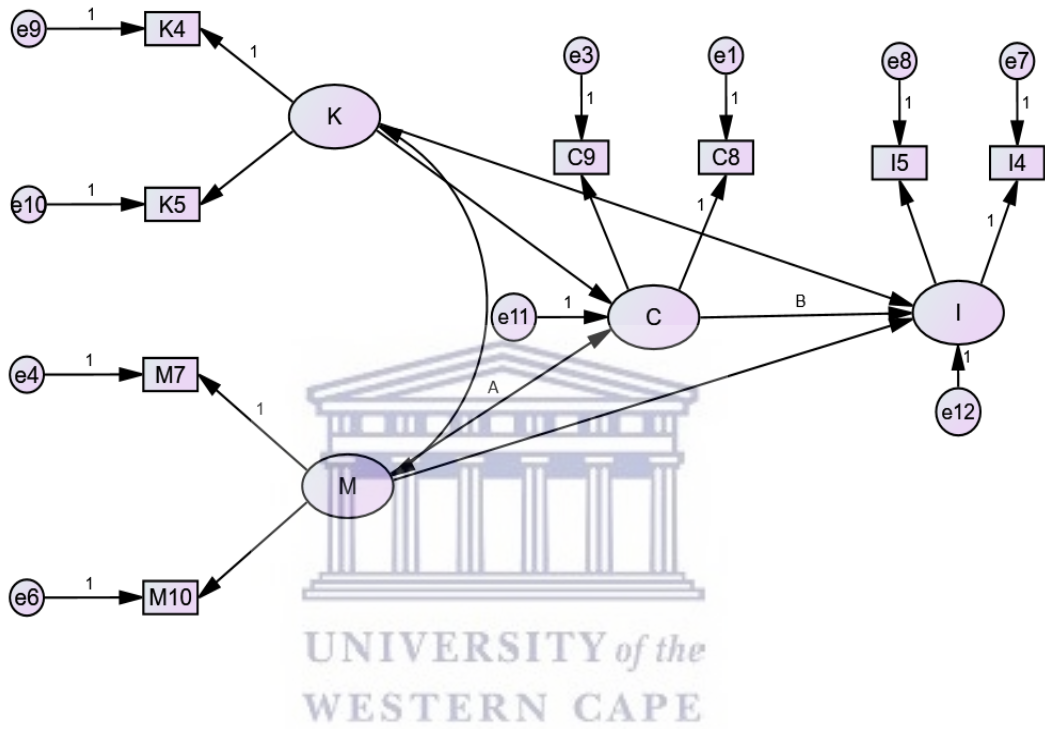
a. Dependent Variable: I

Appendix 9C: Structural model showing self-efficacy mediation between knowledge and interest



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Appendix 9D: Structural model showing self-efficacy mediation between attitude and interest



Appendix 10: Interview guide for WLHIV on safe conception needs

Preliminaries

Thank you for consenting to have this conversation with me.

My name is _____ [introduce self and role to participant]. I am here for us to deliberate on the needs of WLHIV in the context of childbearing. This is to engender understanding of these needs and how they can be factored into a training programme that is geared towards training healthcare workers on safe conception.

I would appreciate that you share your thoughts with me in a manner that is as clear and as honest as possible. There are no right or wrong answers. All shared thoughts are appreciated; be they positive or negative. Be reminded and assured that all thoughts shared in this discussion would be held in confidence. I am here to listen to you because your thoughts and experiences count in shedding more light on the topic. I trust that you would feel comfortable to go through this discussion. Our discussion would be recorded with this [*show the recorder*] and then written out. I may also take some notes. These activities are to help remember the things you have said. All information (names, names of places etc.) that could lead to your identification with written document will be removed. Similar information from other participants would be collated and reviewed alongside yours for a better insight on the issues at stake. What you said would not be shared as something you specifically said. However, portions of your thoughts as well as those from other participants can be used to illustrate a point. This would be done in a manner devoid of identifying characters thereby protecting your identity.

As you have consented to the conversation, I would like to start the recording. Please, do you have any questions? Are you ready for us to start please?

Interviewer turns on the recorder and start the discussion

Section A: General Information

Date of interview	
Time of interview start ___ end ___	Time of interview ends ___
Place of interview	
Age of participant	
Marital status	
Ethnicity of participant	
Level of education	
Occupation	
Years since HIV diagnosis	
Ever on HIV medication?	
Are you currently on ART?	
If yes, how long?	
Lifetime pregnancies	
Lifetime births	
Number of children alive	
Are you currently making any attempt to have a child (after being diagnosed with HIV)?	

Status of partner whom you are trying to have a child with	
--	--

Section B: Safe Conception Needs of WLHIV

1. What do you need in order to have a child without infecting your partner? List them, then explain them?
2. Do you think you will need help from healthcare workers to meet your desire? Why?
3. If yes, what kind of help will you need from them? (What kind of information do you need and how, where should it be delivered?)
4. Have you ever had any such need met with the help of the healthcare worker?



Appendix 11: Certificate of translation



GHANAIAN LANGUAGES EDUCATION AND TRANSLATION CONSULT

P. O. Box CT 6532

Accra-Ghana

Tel: +233 (0) 207333161

+233 (0) 243971300

Email: gletco2@gmail.com

Our Ref: GLETCO/C/02/19

Your Ref:

Date: July 30, 2019

CERTIFICATION OF RESEARCH TOOLS

This is to certify that the **Ghanaian Languages Education and Translation Consult** delivered the following services to Ms Ellen Eyi Klutsey regarding her PhD study project entitled **“Development of a safe conception training programme for healthcare workers in antiretroviral therapy units in the Volta Region, Ghana”**:

1. Translation of the contents of the consent forms from English to Ewe, back-translation into English and authentication
2. Translation of interviews from Ewe into English, back-translation, reconciliation and authentication.



GABRIEL KWAME AGBEMEHIA
 DEPUTY EXECUTIVE DIRECTOR
 GHANAIAN LANGUAGES EDUCATION AND TRANSLATION CONSULT
 P. O. BOX CT 6532
 ACCRA – GHANA

ELLEN EYI KLUTSEY
 SCHOOL OF NURSING
 FACULTY OF COMMUNITY AND HEALTH SCIENCES
 UNIVERSITY OF THE WESTERN CAPE
 PRIVATE BAG X 17,
 BELLVILLE 7535,
 SOUTH AFRICA

LANGUAGES:

- * Akan (Akan, Twi)
 - * Asante Twi
 - * Dagbani
 - * Dagbani
 - * Dangme
 - * Ewe
- * Ga
 - * Gonja
 - * Kusaie
 - * Mamfe
 - * Nzema
 - etc.

OUR SERVICES:

- * Material Development
 - * Translation
 - * Transcription
 - * Assessment of manuscripts
- * Editing
 - * Proofreading
 - * Tutorials
 - * Research and more

Appendix 12A: Generating initial codes (phase I of thematic analysis)

TRANSCRIPT 4 3RD ANALYSIS AUG.1.2020 anal.revisited i

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Calibri (Body) 12 A A² A³ A⁴ A⁵ A⁶ A⁷ A⁸ A⁹ A¹⁰ A¹¹ A¹² A¹³ A¹⁴ A¹⁵ A¹⁶ A¹⁷ A¹⁸ A¹⁹ A²⁰ A²¹ A²² A²³ A²⁴ A²⁵ A²⁶ A²⁷ A²⁸ A²⁹ A³⁰ A³¹ A³² A³³ A³⁴ A³⁵ A³⁶ A³⁷ A³⁸ A³⁹ A⁴⁰ A⁴¹ A⁴² A⁴³ A⁴⁴ A⁴⁵ A⁴⁶ A⁴⁷ A⁴⁸ A⁴⁹ A⁵⁰ A⁵¹ A⁵² A⁵³ A⁵⁴ A⁵⁵ A⁵⁶ A⁵⁷ A⁵⁸ A⁵⁹ A⁶⁰ A⁶¹ A⁶² A⁶³ A⁶⁴ A⁶⁵ A⁶⁶ A⁶⁷ A⁶⁸ A⁶⁹ A⁷⁰ A⁷¹ A⁷² A⁷³ A⁷⁴ A⁷⁵ A⁷⁶ A⁷⁷ A⁷⁸ A⁷⁹ A⁸⁰ A⁸¹ A⁸² A⁸³ A⁸⁴ A⁸⁵ A⁸⁶ A⁸⁷ A⁸⁸ A⁸⁹ A⁹⁰ A⁹¹ A⁹² A⁹³ A⁹⁴ A⁹⁵ A⁹⁶ A⁹⁷ A⁹⁸ A⁹⁹ A¹⁰⁰ A¹⁰¹ A¹⁰² A¹⁰³ A¹⁰⁴ A¹⁰⁵ A¹⁰⁶ A¹⁰⁷ A¹⁰⁸ A¹⁰⁹ A¹¹⁰ A¹¹¹ A¹¹² A¹¹³ A¹¹⁴ A¹¹⁵ A¹¹⁶ A¹¹⁷ A¹¹⁸ A¹¹⁹ A¹²⁰ A¹²¹ A¹²² A¹²³ A¹²⁴ A¹²⁵ A¹²⁶ A¹²⁷ A¹²⁸ A¹²⁹ A¹³⁰ A¹³¹ A¹³² A¹³³ A¹³⁴ A¹³⁵ A¹³⁶ A¹³⁷ A¹³⁸ A¹³⁹ A¹⁴⁰ A¹⁴¹ A¹⁴² A¹⁴³ A¹⁴⁴ A¹⁴⁵ A¹⁴⁶ A¹⁴⁷ A¹⁴⁸ A¹⁴⁹ A¹⁵⁰ A¹⁵¹ A¹⁵² A¹⁵³ A¹⁵⁴ A¹⁵⁵ A¹⁵⁶ A¹⁵⁷ A¹⁵⁸ A¹⁵⁹ A¹⁶⁰ A¹⁶¹ A¹⁶² A¹⁶³ A¹⁶⁴ A¹⁶⁵ A¹⁶⁶ A¹⁶⁷ A¹⁶⁸ A¹⁶⁹ A¹⁷⁰ A¹⁷¹ A¹⁷² A¹⁷³ A¹⁷⁴ A¹⁷⁵ A¹⁷⁶ A¹⁷⁷ A¹⁷⁸ A¹⁷⁹ A¹⁸⁰ A¹⁸¹ A¹⁸² A¹⁸³ A¹⁸⁴ A¹⁸⁵ A¹⁸⁶ A¹⁸⁷ A¹⁸⁸ A¹⁸⁹ A¹⁹⁰ A¹⁹¹ A¹⁹² A¹⁹³ A¹⁹⁴ A¹⁹⁵ A¹⁹⁶ A¹⁹⁷ A¹⁹⁸ A¹⁹⁹ A²⁰⁰ A²⁰¹ A²⁰² A²⁰³ A²⁰⁴ A²⁰⁵ A²⁰⁶ A²⁰⁷ A²⁰⁸ A²⁰⁹ A²¹⁰ A²¹¹ A²¹² A²¹³ A²¹⁴ A²¹⁵ A²¹⁶ A²¹⁷ A²¹⁸ 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Appendix 12B: Generating themes (phase 3 of thematic analysis)

PHASE 3: SEARCHING FOR THEMES


Disclosure issues 1 ✓✓	conception strategies known/used/needed 2 ✓✓	Communication issues 3 ✓✓	Conception difficulty 4 ✓✓	Partner issues 5 ✓✓	HCWs' input (acted or omitted) 6
<ul style="list-style-type: none"> • Afraid to disclose to husband • Alleged disclosure • Alleged disclosure to partner • Anticipated separation from disclosure • Anticipated consequences of disclosure • Difficulty in disclosing • Disclose HIV status to partner • Disclose HIV status to partner 	<ul style="list-style-type: none"> • Calling on God as a strategy aside ARV to prevent HIV infection; • Claims knowledge of when to get pregnant (ovulation period) • Client has demand for safe conception education • Client has demand for safe sex and SCE • Decided against condom use until delivery • Decided to leave out condom out to give birth • Decided to stop condom use to give birth without HCWs advise • defaulted clinic attendance since becoming pregnant • condomless sex during moments of getting pregnant • continuation with ART for 6 • visit facility for advice when ready to have a child 	<ul style="list-style-type: none"> • Can listen to what others say at the facility but not speak; • Can speak when engaged in one-on-one conversation • Cannot initiate a conversation on reproductive issues even with privacy • Client have fertility intentions highly prioritized • Communication: did not inform HCWs of fertility intention • Concerns not addressed; no room to voice them • Could not approach any HCW for advice • Could not ask help for infertility earlier • Could not ask intended questions on reproductive issues • Could not discuss her fears with HCWs. • Could not enquire about other ways of preventing [HIV] infection 	<ul style="list-style-type: none"> • Anxiety about infertility due to age (advanced) • Assistance to resolve delayed pregnancy (infertility) • Bothered with infertility • Difficulty conceiving • Difficulty in getting pregnant • Elderly partner but has never had a child • Expressed difficulty with conception 	<ul style="list-style-type: none"> • Anticipate difficulty coming to clinic with partner • Coming to clinic with partner would be difficult • Couple HIV testing for advice endorsed • Couple sort help from HCW to have a baby • Couple testing and treatment was advised • Couple testing was done • Couples must reach agreement on preventing high viral load • Avoid indiscriminate sex • Aware partner can be infected • Difficulty negotiating condom use with husband 	<ul style="list-style-type: none"> • Believed HCWs know HIV prevention medications • Expects assistance form HCWs • Expects HCWs to educate her on safe childbearing in HIV • Expects HCWs to know their needs • Had education on HIV transmission • HCW know the help need to have children • HCW perforate condom for childbearing • HCWs at the ART units desired source of info

Appendix 13A: Introductory letter from National AIDS/STI Control Programme

NATIONAL AIDS/STI CONTROL PROGRAMME

In case of reply the number and date of this letter should be quoted

My Ref. nacp.....
Your Ref. No.....


GHANA HEALTH SERVICE
Year Health - Our Dream

P.O. Box KB 547
Korle-Bu, Accra
Tel. (233-302) 67 84 57 - 9
Fax: (233-302) 66 26 91
Email 1: info@nacp.org.gh
Email 2: saddo@nacp.org.gh

15th May, 2019

THE REGIONAL DIRECTOR
VOLTA REGION

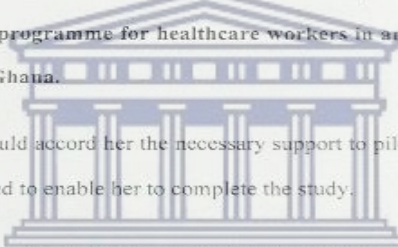
Dear Sir,

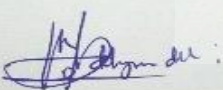
LETTER OF INTRODUCTION – ELLEN EYI KLUTSEY

This is to introduce to you the aforementioned doctoral student who has obtained ethical clearance from the Ghana Health Service Ethics Review Committee and has also signed a confidentiality undertaking agreement with NACP to conduct a study titled: **Development of a safe conception training programme for healthcare workers in antiretroviral therapy units in the Volta Region, Ghana.**

I would be grateful if you could accord her the necessary support to pilot the safe conception training programme developed to enable her to complete the study.

Attached are signed copies of the confidentiality undertaking and agreement from NACP to enable her access HIV/AIDS data.


UNIVERSITY of the
WESTERN CAPE


DR. STEPHEN AYISI ADDO
PROGRAMME MANAGER

Appendix 13B: Application letter seeking permission to pilot the SCTP

UNIVERSITY OF HEALTH AND ALLIED SCIENCES
SCHOOL OF NURSING AND MIDWIFERY
PMB 31
HO

MAY 15, 2019

THE REGIONAL HEALTH DIRECTOR
VOLTA REGIONAL HEALTH DIRECTORATE
P. O. BOX HP 72
HO – VOLTA REGION

Dear Sir,

PERMISSION TO PILOT A SAFE CONCEPTION TRAINING PROGRAMME

I am Ellen Eyi Klutsey, a lecturer in the Nursing Department of the University of Health and Allied Sciences, and also doctoral in nursing student at the University of the Western Cape, South Africa.

I humbly write to apply for permission to pilot a safe conception training programme developed for nurses and midwives working at the antiretroviral therapy (ART) units in the Volta Region. It is a **non-residential** programme scheduled for May 22 and 23 at the University of Health and Allied Sciences, Ho. Transportation and accommodation fees will be refunded to participants. The training programme is an outcome of two earlier phases of my study entitled “**Development of a safe conception training programme for healthcare workers in antiretroviral therapy units in the Volta Region, Ghana**”.

Ethical clearance was obtained from the Ghana Health Service Ethics Review Committee, the National AIDS/STI Control Programme and the Volta Regional Health Directorate – please find copies attached.

Counting on your kind considerations.

Thank you.

Yours faithfully,



Ellen Eyi Klutsey
(Principal Investigator)

EMAIL: elleneyi@yahoo.com

TEL.: 0201636016 OR 0243267148

Appendix 13C: A letter inviting selected participants to the piloting of the SCTP

In case of reply the number and the date of this letter should be quoted

My Ref No. VRHD/ORD/20

Your Ref. No.....

OUR GHS CORE VALUES

- PEOPLE-CENTRED SERVICES
- PROFESSIONALISM
- TEAM WORK
- INNOVATION/EXCELLENCE
- DISCIPLINE
- INTEGRITY



Volta Regional Health Directorate
GHANA HEALTH SERVICE
P. O. BOX 72
HO. V/R.
Tel: (036) 2028210
Fax : (036) 2028244

volta-health@4u.com.gh

17th May, 2019

THE AFFECTED FACILITIES

INVITATION TO A TRAINING PROGRAMME – PILOT A SAFE CONCEPTION TRAINING

This serves to invite all Nurses and Midwives working in the various anti-retroviral therapy units in the Region to a training programme to be held at UHAS, Ho.

This programme is scheduled to take place from the 22nd to 23rd May, 2019 at the SONAM Skills Lab, UHAS near Ho Teaching hospital.

This training is the outcome of two earlier phases of the study entitled 'Development of Safe Conception training for health workers in the various anti-retroviral therapy units in the Region'.

Counting on your usual co-operation.

Thank you.

**[MR. EDWARD KABA]
DEPUTY DIRECTOR [ADMINISTRATION]
FOR: REG. DIRECTOR OF HEALTH SERVICES
VOLTA REGION**

CC:
The M & E/IST Coordinator

GA/JAM

Appendix 14: Post-intervention written evaluation form for HCWs

Introduction: I humbly request you to answer the following questions and statements as truthfully as possible. In doing so, you contribute towards the revision of a training programme aimed at helping women living with HIV to make informed choices to lessen HIV transmission in the process of conception. Thank you.

I have consented to participate in this study
YES [] **NO** []

DATE: ____/____/____
 Day Month Year

Section A:

Instruction: Please respond to each of the following questions as truthfully as you can by either ticking [✓] or filling in the blank with the appropriate answer.

Place of work						Department/Unit of work			
Age in years						Rank			
Gender	Male []	Female []	Religion			Christianity []	Islam []	Traditional []	
Marital Status	Single []		Married []		Divorced []		Co-habiting []	Widowed []	
Category of Health worker	Auxiliary Nurse/ Midwife []		Registered Nurse/ Midwife []		Others _____ specify:				
Level of Education	Certificate []	Diploma []	First Degree []		Masters []	Others, _____ Specify			
Do you have a relative/friend living with HIV?	Yes []		No []		Years of working experience with HIV clients			_____	

Section B

Instruction: Please respond to each of the following questions as truthfully as you can by either ticking [✓] or filling in the blank with the appropriate answer.

SN	QUESTIONS	Yes	No	Don't know
1	Were the modes of delivery of the training useful in increasing your understanding?			
2	Did the methods used in teaching work well?			
3	Did some of the methods used in teaching need to be changed? <i>If yes, state the methods that need change in the spaces below.</i>			

SN	QUESTIONS	Yes	No	Don't know
4	Were the contents at the training appropriate in depth and breadth for you?			
5	Was the reading level appropriate for you?			

SN	QUESTIONS	Yes	No	Don't know
6	Do you think the right topics were covered for the modules?			
7	<p>Were some topics missing? <i>If yes, please write the missing topics in spaces below</i></p> <hr/> <hr/> <hr/>			
8	<p>Were there examples and cases mentioned during the workshop that could be incorporated into the training programme? <i>if yes, write it the spaces provided below</i></p> <hr/> <hr/> <hr/> <hr/>			
9	Were the materials (handouts, PowerPoints) user friendly?			
10	<p>Would you suggest additional materials and resources that would enhance the training? <i>If yes, please write them in the spaces provided below</i></p> <hr/> <hr/> <hr/> <hr/>			
11	<p>Was the time allocated for the activities during training adequate? <i>If not please write your suggestion in the spaces below</i></p> <hr/> <hr/> <hr/> <hr/>			
12	Has the workshop met your expectation?			

Section C

Instruction: Please respond to each of the following questions as truthfully as you can by writing the appropriate answer in the spaces provided.

1. What are the three most important **things you learned** during this training?

A. _____

B. _____

C. _____

2. What presentation styles were the most effective for you? (For example, case studies, role play, lecture and group exercise?)



3. How useful was this training programme to you?

4. Please provide one example of how your practice will change as a result of this training (if any).

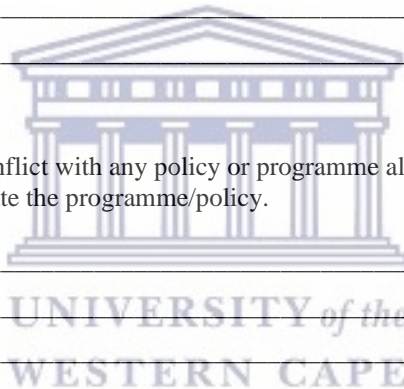
5. What additional assistance, if any, will you need to be able to implement what you've learned at this training? For example, supervisory support, videos, newsletters, classroom-based training, etc.). Please be as specific as possible.

6. If you were given the task of revising, adjusting, or redesigning this training programme, what would you change?

7. Apart from nurses and midwives, which other category of providers need this training?

8. Apart from women living with HIV, which other category of persons need this education?

9. Does this training programme conflict with any policy or programme already running in the HIV continuum of care in your facility? If yes, state the programme/policy.



10. Does this training programme complement any existing policy or programme already being run in the HIV continuum of care in your facility? If yes, state the programme/policy.

Appendix 15: Post-intervention evaluation topic guide for HCWs (FGD)

Preliminaries

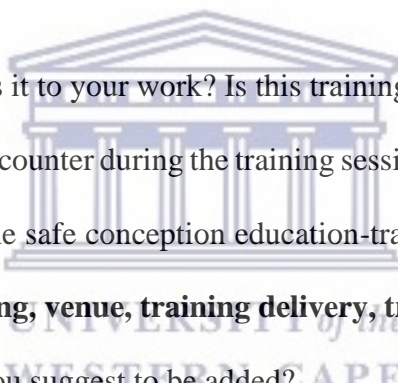
Thank you for honouring the invitation for this focus group discussion. My name is _____ [introduce self to participant]. I will be facilitating the proceedings of this group. I am here for us to deliberate on the two-day training we have participated in to enable fine tuning of the SCTP. Hence, truthful expressions of our experiences and thoughts would be much appreciated.

Before we start, we need to have some ground rules to enable decorous and interaction. We have to agree that we must take turns to speak, so one person must finish expression his/her thoughts before the next person take the floor when allowed by the facilitator. Every participant must be accorded due respect to comfortable and in expressing him or herself. Every thought or experience is welcomed, there is no wrong or right answer to a question. Also, everything discussed during the proceedings must remain here. They must not be taken outside.

Be assured that every information shared here would be held in confidence. Our discussion would be recorded with this [show the recorder] and then written out. Some notes may also be taken by the secretary to the group [introduce him/her]. These activities are to help remember the things you have said. All information (names, names of places etc.) that could lead to your identification with written document will be removed. Similar information from other group's participants would be collated and reviewed alongside yours for a better insight on the issues at stake. What you said would not be shared as something you specifically said. However, portions of your thoughts as well as those from other participants can be used to illustrate a point. This would be done in a manner devoid of identifying characters thereby protecting your identity. Please, do you have any questions before we proceed?

Each participant must introduce his or herself by first name or any name you want us to address you with here and the facility you are representing.

SN	Focus Group Attendees	Facility represented

- 
1. This SCTP, how relevant is it to your work? Is this training useful to you? In what ways?
 2. What challenges did you encounter during the training session? How can they be resolved?
 3. How can we improve on the safe conception education-training programme for effective delivery? (**regarding timing, venue, training delivery, training materials, etc.**)
 4. What other topics would you suggest to be added?
 5. What are the strengths of the programme? Can they be strengthened, how?
 6. What are the weaknesses of the programme? What is your suggesting concerning addressing them?
 7. Apart from women living with HIV, which other category of people do you think need to have safe conception education and why?
 8. Apart from nurses and midwives which other cadre of providers need this training?
 9. What is your overall impression about the training programme?

Appendix 16: Post-intervention written evaluation for the Observer

Section A

Instruction: Please respond to each of the following questions as truthfully as you can by writing the appropriate answer in the spaces provided.

SN	QUESTIONS	Yes	No
1	Were the modes of delivery of the training appropriate for participants understanding?		
2	Did the methods for the teaching work well?		
3	Do some methods need to be changed? <i>If yes, state the methods that need change in the spaces below.</i> _____		
4	Were the participants engaged effectively during the training		
5	Was the interaction between the facilitator and the participants lively		
6	Did the various components of the programme flow smoothly?		
7	Did the participants refer to the training materials?		
8	Were time allocations adequate for the class activities? <i>If no, please suggest the average time needed.</i> _____		
9	Was the time allocated for the workshop as a whole adequate? <i>if no, write your suggestion in the spaces provided.</i> _____ _____ _____		

Section B

Instruction: Please respond to each of the following questions as truthfully as you can by writing the appropriate answer in the spaces provided.

1. What are the strengths and weaknesses of the training programme?

Strengths

Weaknesses

What suggestions would you give for improvement of the programme?

Any other comment:



Appendix 17: Post-intervention written evaluation for the Trainer

Section A

Instruction: Please respond to each of the following questions as truthfully as you can by writing the appropriate answer in the spaces provided.

SN	QUESTIONS	Yes	No
1	Were the modes of delivery of the training useful in increasing participants understanding?		
2	Did the methods for the teaching work well?		
3	Do some methods need to be changed? <i>If yes, state the methods that need change in the spaces below.</i> <hr/> <hr/> <hr/>		
4	Was the content at the appropriate depth and breadth for the audience?		
5	Was the reading level appropriate?		
6	Were the right topics covered for the modules?		
7	Were some topics missing? <i>If yes, please write the missing topics in spaces below</i> <hr/> <hr/> <hr/>		
8	Were there examples and cases mentioned during the workshop that could be incorporated into the curriculum? <i>if yes, write it the spaces provided below</i> <hr/> <hr/>		

SN	QUESTIONS	Yes	No
9	Were the materials (handouts, PowerPoints) user friendly?		
10	Did the you (trainer) make use of all materials (handouts, PowerPoints etc.)?		
11	Did the participants refer to the training materials?		
12	<p>Would you suggest additional materials and resources that would enhance the training?</p> <p><i>If yes, please write them in the spaces provided below</i></p> <hr/> <hr/> <hr/> <hr/>		
13	Was the time allocated for the activities during the training adequate?		
14	Was the training effective?		



Section B

Instruction: Please respond to each of the following questions as truthfully as you can by writing the appropriate answer in the spaces provided.

1. Apart from nurses and midwives which other cadre of providers need this training?

2. Apart from women living with HIV, which other category of people need this education?

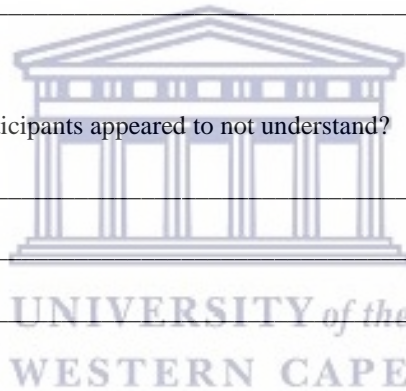
3. What are the strengths and weaknesses of the training programme?

Strengths

Weaknesses

4. What components/concepts did participants seem to understand well?

5. Were there any concepts that participants appeared to not understand?



6. What challenges did you encounter during the training session?

7. Are the contents of the training programme within the domain of nurses and midwives?

8. What (if anything) would you do differently next time in presenting today's training content?

Any other comment:



UNIVERSITY *of the*
WESTERN CAPE

Appendix 18: Post-intervention evaluation interview guide for WLHIV

Preliminaries

Thank you for consenting to have this conversation with me.

My name is _____ [introduce self and role to participant]. I am here for us to deliberate on the needs of WLHIV in the context of childbearing. This is to engender understanding of these needs and how they can factored into a training programme that is geared towards training healthcare workers on safe conception.

I would appreciate that you share your thoughts with me in a manner that is as clear and as honest as possible. There are no right or wrong answers. All shared thoughts are appreciated; be they positive or negative. Be reminded and assured that all thoughts shared in this discussion would strictly, be held in confidence. I am here to listen to you because your thoughts and experiences count in shedding more light on the topic. I trust that you would feel comfortable to go through this discussion. Our discussion would be recorded with this [*show the recorder*] and then written out. I may also take some notes. These activities are to help remember the things you have said. All information (names, names of places etc.) that could lead to your identification with written document will be removed. Similar information from other participants would be collated and reviewed alongside yours, for a better insight on the issues at stake. What you said would not be shared as something you specifically said. However, portions of your thoughts as well as those from other participants can be used to illustrate a point. This would be done in a manner devoid of identifying characters thereby protecting your identity.

As you have consented to the conversation, I would like to start the recording. Please, do you have any questions? Are you ready for us to start please?

Interviewer tuns on the recorder and start the discussion

Section A: General Information

Date of interview	
Time of interview start __ end __	Time of interview ends __
Place of interview	
Age of participant	
Marital status	
Ethnicity of participant	
Level of education	
Occupation	
Years since HIV diagnosis	

Ever on HIV medication?	
Are you currently on ART?	
If yes, how long?	
Lifetime pregnancies	
Lifetime births	
Number of children alive	
Are you currently making any attempt to have a child (after being diagnosed with HIV)?	
Status of partner whom you are trying to have a child with	

Section B: Questions on safe conception education

1. Have you had any education on safe conception from the healthcare workers recently?
2. If yes, briefly narrate to me what the education was about.
3. How would you describe the information given to you during the education (useful, adequate, inadequate)? Explain
4. Which other information do you think you need which must be added?
5. Does any of the health education messages conflict your religion, social norm/taboo etc.?
If yes, state the conflicting message and what (religion, taboo, etc.) it is conflicting with?
6. Apart from you, which other category of people do you think need this information? Why?
7. How do you think the safe conception education should be done for maximum effectiveness?
8. How useful is this education to you? (how would the information you received help you in your childbearing efforts?)

Appendix 19: Data transformation from qualitative to quantitative

POST SCTP OPENENDED ANALYSI AUGUST.7.2019

Home Insert Draw Page Layout Formulas Data Review View

Calibri (Body) 12

General

Conditional Formatting Format as Table Cell Styles

Insert Delete Format Sort & Filter Find & Select

E2 TALLY

SN	CODE NO	WORKPLACE	THINGS_LEARNT	TALLY	MODULES AS CATEGORIES	FREQ	%
1	01	Adidome	x	x	Dignity conserving HIV care	10	27.0%
2	02	Ho Polyclinic	effective communication, dignity in health care, how stigma occurs	a, b	Communication	10	27.03%
3	03	Adidome	procreation is a right, WLHIV can have children without infecting their partners and child, counselling on procreation	a, e	Antiretroviral Therapy	6	16.2%
4	04	Dzodze	improving communication skills, helping to reduce stigma and discrimination, upholding the dignity of the patient	b, a	Safer sex in the context of procreation	1	2.7%
5	05	Peki	effective communication, preconception counselling for discordance/concordant couples, ART and mode of action	b, e, c	Reproductive choices in HIV	9	24.3%
6	06	HT Hosp	communication skills, early treatment of disease, monitoring of clients on ART	b, c	Infertility in women living with HIV	0	0.00%
7	07	HT Hosp	stigma, discrimination and their negative effects, communication and its benefits on the health system, ART	a, b, c	HIV status disclosure	1	2.70%
8	08	Sogakope	assisted reproductive technologies, use of post-exposure prophylaxis, communication with client in simple language	e, c, b	Total	37	100.0%
9	09	Worawora	how stigma occurs, what fuels stigma and discrimination, types of communication	a, b			
10	10	Keta	safe sex in the context of procreation, reproductive right for WLHIV, prevention of stigma and discrimination	d, a			
11	11	HM Hosp	safe sex in the context of procreation, the communication process, avoiding stigma and discrimination at work	d, b, a			
12	12	Akatsi	effects of stigmatization and discrimination, ARV combinations and their mechanism of work, communication skills	a, c, b			
13	14	Battor	safe conception	e			
14	15	Ketu South	helping WLHIV to conceive without infecting the infant, safer sex for procreation, reducing stigma and discrimination in PLHIV	e, a			
15	17	Ketu South	home insemination, third line HIV treatment, sperm washing	e, c			

ANALYSIS8.8.2019 Sheet24 INSERT_EXAMPLS8a THINGS LEARNT EFF_TEACH_METHOD PROG_USEFUL PRACTICE_CHANGE INPUT_4PRACTICE CH

Enter 100%

Appendix 20: Research participant referral form for psychological care



UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

RESEARCH PARTICIPANT REFERRAL FORM

Respondent's name _____

Referred from _____

Referred to _____

Reason for referral _____



Date _____

Principal Investigator's Signature _____

In case of further enquiry on the referral, please call the Principal Investigator on 0201636016

Appendix 21: Focus group confidentiality binding form for HCWs



UNIVERSITY OF THE WESTERN CAPE
Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-9592852 Fax: 27 21-959 2671

E-mail: elleneyi@yanoo.com

FOCUS GROUP CONFIDENTIALITY BINDING FORM

PROJECT TITLE: DEVELOPMENT OF A SAFE CONCEPTION TRAINING PROGRAMME FOR HEALTHCARE WORKERS IN ANTIRETROVIRAL THERAPY UNITS IN THE VOLTA REGION, GHANA.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone by the researchers. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits. I understand that confidentiality is dependent on participants in the Focus Group maintaining the same.

I hereby agree to uphold the confidentiality of the discussions in the focus group by not disclosing the identity of other participants or any aspects of their contributions to members outside of the group.

Participant's signature.....

Date.....

Signature of the one obtaining the consent..... Date