

**UNIVERSITY OF WESTERN CAPE FACULTY OF COMMUNITY AND HEALTH
SCIENCES**

**Undergraduate nursing students' knowledge, attitudes and practices toward HIV and AIDS
in a higher education institution**

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DECLARATION

I Nontuthuzelo Duduzile Cynthia Nongalaza declare that **“undergraduate nursing students’ knowledge, attitudes and practices toward HIV and AIDS”**, is my own work and all the sources that I have used or cited have been acknowledged with complete references, and that I have not previously submitted this work for any other degree at any other institution.

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DEDICATION

This work is dedicated to my sister who died of AIDS in Durban, Kwazulu-Natal and to my family, friends and to people all over the world infected and affected by HIV and AIDS. Romans 8:28 “And we know that for those who love God all things work together for good, for those who are called according to his purpose.”



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My extreme appreciation goes to God, thanking HIM for everything HE has done for me (Ephesians 2:5).

I will be forever grateful to all the nursing students who willingly completed the questionnaire. Many thanks to the lecturers of the School of Nursing and the higher education institution of the Western Cape for granting me permission to conduct this study on their campus.

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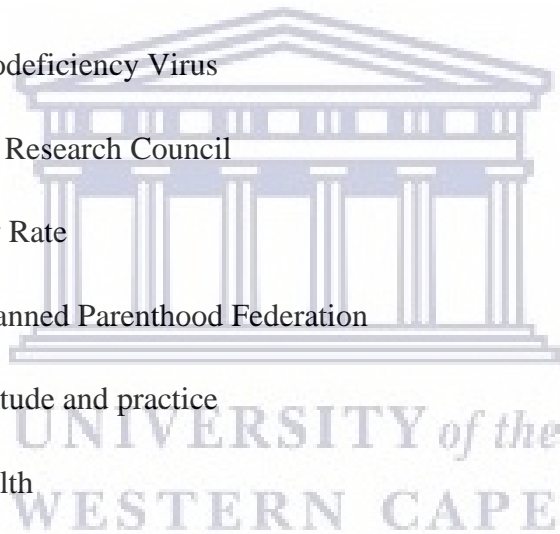
Special thanks also go to Dina Venter, a statistician, and Feikoab Parimah for assisting me with the data analysis and for their everlasting support.

The best thank you to my late mom and dad, my guiding angels and, my only son Mduduzi Bathandwa Walter Nongalaza. Thank you for making me strong and capable of doing things by myself, and for believing that the sky is the limit. I will always strive to be the best because of you!

Lastly, I extend my gratitude to my late brother, Mziwandile Gladstone Nongalaza (an Educator with many talents) for his love and support, who taught me to have faith, and that nothing is impossible (Matthew 17:20).

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of variance
ARV	Antiretroviral
ART	Antiretroviral Therapy
AVERT	Averting HIV and AIDS
HCW	Healthcare Worker
HEI	Higher Education Institution
HIV	Human Immunodeficiency Virus
HSRC	Human Science Research Council
IMR	Infant Mortality Rate
IPPF	International Planned Parenthood Federation
KAP	Knowledge, attitude and practice
MoH	Ministry of Health
NSP	National Strategic Plan
PLWHA	People living with HIV and AIDS
PMTCT	Prevention of mother-to-child transmission
R425	Regulation leading to enrolment as a registered nurse
RSA	Republic of South Africa
SABSSM	South African National HIV Prevalence, Incidence, Behaviour and Communication Survey



SANC South African Nursing Council
SN Student Nurse
VCT Voluntary Counselling and Testing
+ve HIV positive



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ABSTRACT

Introduction and background: South Africa has the highest rate of HIV epidemic in the world, with the total number of PLWHA estimated at approximately 7.97 million in 2019. Learning outcomes related to HIV and AIDS are embedded in the four-year Bachelor of Nursing programme. However, little is known in the South African context about the knowledge, attitude, and practice of nursing students regarding HIV and AIDS. The aim of the study was to examine the knowledge, attitudes, and practices of undergraduate nursing students towards HIV and AIDS.

Methodology: This study employed quantitative descriptive cross-sectional design. The data was collected from a sample of 257 nursing students ranging from first-years to fourth-years. The data was analyzed using SPSS Statistics version 24.0. Independent samples t-test, one-way ANOVA, and Chi-square were used to analyze the data. Statistical significance was set at $p < .05$.

Results: The results in this study indicated that 50.2% ($n=129$) of the total study population had moderate knowledge. In attitude, they were mostly grouped in the moderately positive category (41.2%, $n=106$), with practices falling in the Fair amount group (36.6%, $n=94$). Chi-square was used in establishing the association between Knowledge, attitude and practice. A significant association was found between knowledge and attitude. Moreover, the One-Way ANOVA showed a significant effect of demographic variables on nursing students' knowledge, attitudes, and practices.

Conclusions: The overall knowledge and empathetic attitude of senior nursing students was greater than junior nursing students. The refraining attitude are high as nursing students are worried about contracting HIV. There is also a gap in the existing knowledge, among nursing students, about HIV and AIDS transmission routes. Nursing students' preparedness for care was relatively high because their knowledge about HIV and AIDS was good. Lastly, the findings of this study indicate that HIV

knowledge can change attitudes and that, in turn, can prevent the spread of HIV. Extensive HIV education should be provided to nursing students in clinic and hospital settings and during lectures on the management of HIV.

Key words: Attitude, HIV and AIDS, knowledge, nursing students, practices.



CHAPTER 1

Introduction

This chapter provides an overview of the background of the study about HIV and AIDS from global perspectives and South Africa's response to HIV and AIDS, the problem related to knowledge, attitudes and practices towards HIV and AIDS, and the aim and objectives of the study. The chapter also presents the research question as well as the significance and motivation of study. It outlines operational definitions, concepts and briefly describes the research methodology.

1.1 Background to the study

According to the World Health Organization (WHO), globally about 35 million people have died of HIV. As at the end of 2018, 36.9 million people were living with HIV (WHO, 2019). South Africa first detected an HIV case in 1982 and currently ranks fourth (i.e., globally) in terms of the most number of infections, and the most in Africa, with the number of HIV infections estimated to be 7.97 million and an estimated 126 805 HIV related deaths (Stats SA, 2019).

The number of people living with HIV and AIDS in South Africa has escalated at an alarming rate. According Global AIDS Monitoring (GAM) System, the current estimated global HIV prevalence is approximately 13.5% compared to the 18.1% of the total South African population in 2018 (UNAIDS, 2017). The total number of people living with HIV is currently estimated at approximately 7.97 million compared to 7.52 million in 2018. Ouzouni and Nakakis (2012) argued that although the number of HIV positive cases and AIDS has effectively been increasing, the information given to people is that the AIDS problem has been settled or, at worst, is under control. People are getting such mixed messages, which led to a decrease in HIV and AIDS education, including its treatment compliance, stigma and discrimination (Avert, 2019).

In South Africa the number of AIDS related deaths has declined continually since 2006 because access to antiretroviral treatment has changed the prior patterns of mortality (Stats SA, 2019). The AIDS related death rate decreased, post 2006, because people began taking ARVs (WHO, 2013). This has resulted in less communication about methods of preventing HIV infections, with the exception of 1 December - World AIDS Day. Consequently, people are now assuming that HIV and AIDS is no longer threatening, and that if you acquire HIV you will get treatment and there is no need to use protection (Bertozzi et al., 2006). Frain (2017) argues that since the HIV and AIDS epidemic has received less attention from the headlines, correspondingly, HIV and AIDS related education in a number of nursing schools, including undergraduate students receive inadequate education about HIV and AIDS. A number of nursing students in their final year report feeling inadequate/unprepared to care for people living with HIV. This feeling of inadequacy/unpreparedness is probably the result of inadequate knowledge, which subsequently instill in them the fear of working with people living with HIV, and stigmatizing attitudes towards them (Avert, 2019).

The primary aim of the study was to examine the knowledge, attitudes, and practices regarding HIV and AIDS among undergraduate nursing students in a University within the Western Cape province of South Africa. However, the researcher also tried to examine the impact of demographic variables, such as age, gender, year of study and healthcare settings, on the knowledge, attitudes and practices in respect of HIV and AIDS, and to determine associations between knowledge, attitudes and practice. According to Karki (2016) the impact of independent variables is explored as a predictor of dependent variables (KAP), with demographic variables having a comparatively significant impact on knowledge, attitude and practices compared to other social factors.

Previous studies indicated that nursing students had moderate knowledge regarding matters surrounding HIV and AIDS (Bektas & Kulakac, 2007; Dharmalingan et al., 2015; Erriksson & Grundin, 2010; Kok et al., 2018; Leyva-Moral et al., 2017). It also found misconceptions regarding the means of transmission of HIV: transmission by mosquito bite, sharing silverware, hugging or kissing someone who is HIV positive (Atav et al., 2015; Dharmalingan et al., 2015; Erriksson & Grundin, 2010; Kok et al., 2018; Leyva-Moral et al., 2017).

A similar study revealed that nursing students were mostly grouped in the moderately positive category in attitude towards HIV and AIDS (Eriksson & Grundin, 2010). This means that nursing students had positive and high empathetic attitudes and negative or high refraining attitudes, due to their insufficient levels of knowledge, an incorrect estimation of their own risk as well as the presence of fear and prejudice toward PLWHA, and were not willing to take care of HIV patients (Akansel et al., 2012). Furthermore, other studies indicated that the majority of nursing students possesses positive and empathetic attitudes towards PLWHA and are more than willing to provide care to such patients but lacked knowledge regarding HIV policies (Karim et al., 2009; Kok et al., 2018; Sehume et al., 2012; Serwaa, 2018). Sehume et al. (2012) suggested that nursing curricula should include extensive teaching about HIV legislation, including internal and external work policies on HIV and AIDS. Nursing students are also reminded to adhere strictly to the universal precaution and the AIDS policy guidelines in the management of HIV/AIDS at all times (Esewe et al., 2017).

A number of studies on this topic indicated that nursing students were willing and prepared to care for PLWHA even though they fear contagion that is, despite the level of stress and depression, many nurses and nursing students still managed to form good relationships with patients and held positive attitudes (Kok et al., 2018; Maughan-Brown et al., 2019). They suggested that the fear of HIV and

AIDS has to be diminished and perceptions of change HIV need to be changed from an incurable disease to a manageable disease, by reducing stigma, possibly through interventions to diminish the association between HIV and AIDS and death. A study that was done in Turkey and the USA revealed that in New York, Baccalaureate nursing students' attitudes toward PLWHA were significantly more positive than Turkish students, but fear of contagion was not. In contrast, Suominen et al. (2015) in Russia and Adikhari (2015) in Nepal, reported that nursing students had negative attitudes towards the care of PLWHA. Atav et al. (2015) and Ozakgul et al. (2014) argued that improvement in students' attitude is beneficial for promoting non-judgmental care for the PLWHA and to increase the quality of care provided to all patients.

1.1.1 South Africa's response to HIV and AIDS

South Africa is the country with the largest burden of HIV and AIDS in the world, and is the first country in the world to conduct five repeated surveys (HSRC, 2019). The Nelson Mandela/Human Science Research Council (HSRC) survey on HIV and AIDS was first conducted in 2002 and repeated in 2005, 2008, 2012 and 2017 to help to monitor South Africa's response to the HIV and AIDS epidemic (HSRC, 2019). The HSRC has produced the South African National HIV Prevalence, Incidence, Behaviour and Communication Survey (SABSSM), a population-based cross-sectional survey of households in South Africa (HSRC, 2019). It provides information on national and sub-national progress toward control of the HIV epidemic in the country. In addition, the implementation of the HIV and AIDS and STI strategic plan for South Africa 2017- 2022 (NSP) is being used as an instrument to account for the social and behavioural change at provincial, local and district government level (NSP, 2019). It is believed that this plan enables and provides for systems that strengthen the fight against HIV and AIDS in South Africa. It is also viewed as helping design and implement evidence-based social and behavioural change interventions aimed at continuing to reduce

new infections (NSP, 2019). According to UNAIDS, expanded ART programmes in Southern Africa have resulted in dramatic decrease in HIV incidence and mortality rates (UNAIDS, 2018). However, there are high rates of new HIV infections despite substantial programmatic scale-up of treatment and prevention interventions (UNAIDS, 2018). The plan also outlines a special focus on HIV prevention among adolescent girls and young women, who have the highest rate of new HIV infections in South Africa (NSP, 2017-2022). Additionally, the South African Nursing Council (SANC, 2014) views HIV and AIDS as a national emergency. The Council has formed a strong partnership with the National Department of Health, the Interdepartmental Committee (IDC) and various other healthcare stakeholders in the fight against HIV and AIDS (SANC, 2014). One of SANC's (2014) primary focuses includes the care for HIV and AIDS patients and management of sexually transmitted diseases (STDs) in the National Curriculum Guidelines. The Council has included in its Quality Promotion Visit Instrument the implementation of Batho Pele and care for the HIV and AIDS patient (SANC, 2014).

South Africa's healthcare system is largely nurse-driven, requiring nurses to have the competence and expertise to manage the country's load of disease and to meet South Africa's healthcare needs (Modeste, 2015; Modeste & Adejumo, 2015). In higher education institutions, the R425 programme as amended by government regulation No R425 of 22 February 1985 of South African Nursing Council (SANC) under the Nursing Act 33 of 2005 (SANC, 2014). The School of Nursing has integrated an HIV and AIDS course in the four-year bachelor programme (Modeste, 2015). However, little is known in the South African context about the knowledge, attitude and practice of nursing students towards HIV and AIDS. The purpose of the study was to investigate undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS in the Western Cape. Every academic institution contributes to knowledge; therefore, the study will generate information that

will add to the literature on knowledge, attitudes, and practices regarding people living with HIV (Basini, 2013; Dhamdhare, 2015).

In conclusion there is so much that is needed to be done at higher education institutions to reinforce competency based curriculums to make sure that HIV competencies are in place, and students are assessed by lecturers and clinical supervisors during clinical accompaniment. All in all, nursing students should have comprehensive range of HIV knowledge in order to provide HIV care and treatment to PLWHA.

1.2 Problem statement

Armstrong and Rispel (2015) have highlighted the unresponsive nature of the nursing curriculum to changes in South Africa's disease burden, suggesting a disjuncture between the government's interest in PHC and nursing training. They observed how nurses were unable to apply theoretical knowledge to patient care, their inability to comprehend professional practice, and the lack of basic skills in nursing. Although there has been a decline in HIV incidence rates (HSRC, 2018), Mabaso et al. (2018) notes that South Africa continues to record the highest number of new HIV infections. This necessitates that healthcare providers be given adequate training with regards to knowledge about HIV and AIDS to help them effectively manage the epidemic (Ngcobo & Mchunu, 2019). Coovadia et al. (2009) and Roos et al. (2016) put forth that nurses (being the spine of any healthcare system) ought to be encouraged to be abreast with the current knowledge with respect to ailments.

Nevertheless studies highlight some gaps in nurses training related to HIV and AIDS in South Africa (Frain, 2017; Modeste, 2015; Ngcobo & Mchunu, 2019; Serwaa, 2018). The Integration Model was developed by Modeste (2015) for the nursing programme and provided guidelines to facilitate the systematic incorporation of HIV and AIDS education into the nursing curriculum. Despite learning

outcomes in the area of HIV and AIDS being embedded in the four-year Bachelor of Nursing programme, the knowledge, attitudes and practices of undergraduate nursing students regarding HIV and AIDS, are not yet known. As future healthcare professionals, nursing students will play a vital role in making a contribution to addressing the HIV and AIDS pandemic in South Africa (Infrastructure Unit Support Systems, 2014). Nursing students are often expected to care for PLWHA from when they enter into nursing practice (Ngcobo & Mchunu, 2019). Therefore, it was important to examine nursing students' knowledge, attitude and practice with respect to HIV and AIDS in order to ascertain gaps in their knowledge, attitudes that are commonly held and behavioural patterns, to improve quality care for PLWHA. It will also give an indication of nursing students' readiness to care for those who are infected with, and affected by, HIV and AIDS.

1.3 Aim of the research

This study aimed to investigate the knowledge, attitudes and practices of undergraduate nursing students toward HIV and AIDS at a higher education institution in the Western Cape province

1.4 Objectives of the study

- To determine undergraduate nursing students' knowledge regarding HIV and AIDS.
- To determine undergraduate nursing students' attitudes regarding HIV and AIDS.
- To determine undergraduate nursing students' practices regarding HIV and AIDS.
- To determine the effect of undergraduate students' demographics on their knowledge, attitudes, and practices.
- To examine the association between undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS

1.5 The study research question

What are the undergraduate nursing students' knowledge, attitudes and practices related to HIV and AIDS at higher education institutions in the Western Cape province of South Africa?

Are there differences in knowledge, attitude and practice regarding HIV and AIDS by demographic variables (i.e., age, gender, healthcare setting and year level of study)?

1.6 Significance of the study

Examining nursing students' knowledge, attitudes as well as practices of HIV and AIDS helps to understand whether the HIV course, spread over four-years, provided adequate training for nursing students to be competent in caring for PLWHIV. The findings of this study will provide relevant information to the training institutions for strengthening HIV and AIDS courses in the nursing programme. The findings of the study could also provide new information to inform curriculum design, so as to enhance and intensify the HIV and AIDS training for nursing students.

1.7 Motivation of the Study

The researcher decided to develop and conduct a study that aimed to collect information on knowledge, attitudes and practices of undergraduate nursing students in regard to HIV and AIDS, at a school of nursing in the Western Cape province of South Africa. "KAP" study assesses the knowledge, attitude including practices of a community and it serves as an educational diagnosis of a particular community (Kaliyaperumal & Expert, 2004).

The objective of the researcher was to collect and analyze data, with regards to knowledge, attitudes and practices of first to final year undergraduate nursing students, on HIV and AIDS. As an infectious disease caused by HIV, AIDS is one of the most dangerous and non-curable disease in modern society. The knowledge, attitudes and practices towards HIV and AIDS among nursing students is

not monitored and leaves nursing students vulnerable and with no direction. Even more worrying is that undergraduate students are part of the youth in SA, a nation with one of the highest HIV infection rates, on a daily basis 200 girls, aged between 15 and 24 years old are infected with HIV. This was confirmed by South Africa's Minister of Health during a TV programme on World's AIDS day in 2018 who also said that we are in a crisis.

Additionally, Allinder and Fleischman (2019) states that nearly 4,500 South Africans are newly infected every week, one-third are adolescent girls and young women (AGYW) aged 15-24 years. Therefore the researcher finds it crucial that these nursing students' knowledge, attitudes and practices regarding HIV and AIDS be assessed because they are future professional nurses. Nurses are an essential part of our health care team and can be the cornerstone of integrated care.

In higher education institutions, KAP has been done on students studying pharmacy, law, social sciences, dentistry, medicine, midwifery and general nursing but hardly on nursing students. The present study examined first to fourth-year undergraduate nursing students' knowledge, attitudes, and practices concerning HIV and AIDS. Bagherzadeh et al. (2015) put forth that designing educational and counselling programmes for undergraduate nursing students requires an assessment of their KAP regarding HIV and AIDS. The results of this study in South Africa can be a step towards a full understanding of undergraduate nursing students KAP regarding HIV and AIDS.

1.8 Operational definitions of concepts

Attitude – Attitude toward the behaviour, this refers to the degree of negative or positive feelings a person has for the behaviour of interest. It entails a consideration of the outcomes of performing a behaviour (Ajzen, 1991). In this study the attitude refers to first to fourth-year nursing students' attitudes towards HIV and AIDS.

HIV and AIDS - HIV stands for human immunodeficiency virus. If left untreated, HIV can lead to the disease AIDS (acquired immunodeficiency syndrome). AIDS stands for acquired immunodeficiency syndrome (Avert, 2019). AIDS is the final stage of HIV infection, and not everyone who has HIV advances to this stage. In this study HIV and AIDS is refers to HIV and AIDS knowledge, attitude and practices among undergraduate nursing (Avert, 2019)

Nursing School – A nursing school is considered a nursing education institution, which is any institution, including a university, where one is educated and trained for the profession of nursing (Nursing Act 33, 2005). In the study, a nursing school is a university, a tertiary educational institution that offers a degree in nursing to students registered for the four-year programme.

Nursing student – Per the definition of the South African Nursing Council (SANC, 2014), a student nurse is “a student in a post-secondary educational program that leads to ‘certification’ and licensing to practice nursing, usually as part of a programme administered by a ‘nursing school’.” For the purpose of this research, nursing students are enrolled in a four-year programme R425 that leads to an associate degree or a Bachelor of Nursing degree (SANC, 2014).

Knowledge – Knowledge is an understanding or expertise gained through experience or education. According to Gray et al. (2017), knowledge is an awareness or perception of reality acquired through insight, learning or investigation, expressed in a form that can be shared. The knowledge (awareness and perception) of first to fourth-year nursing students will be measured using the KAP survey questionnaire in order to determine their knowledge score. In this study the knowledge refers to first to fourth-year nursing students’ knowledge of HIV and AIDS.

Practice – Practice is an act of doing something or from intentions to action (Ajzen, 1985) such as voluntary testing. Practices are the ways in which they demonstrate someone’s knowledge and

attitude through their actions (Kaliyaperumal & Expert, 2004). The practices of first to fourth-year nursing students was examined using the KAP survey questionnaire in order to determine their practice score. In this study “practice” refers to first to fourth year nursing students’ practices such as their clinical exposure and preparedness towards HIV and AIDS.

1.9 Research methodology

The research methodology that is applied in this study will be briefly described. Research methods are everyday procedures such as asking, observing, understanding etc., but are systematically applied in order to collect and analyse data (Flick, 2015). Quantitative research is a research method that is geared towards the measurement of phenomena. The tools used in quantitative studies are predetermined, structured as well as standardised (Parahoo, 2015). According to Gerrish and Lathlean (2015) there is a distinction between the research design and the methods used for data collection. This study employs a quantitative approach using descriptive survey design, adopted for the study, to enable the researcher to examine and describe nursing students’ knowledge, attitudes and practices on HIV and AIDS. Data was collected using the HIV and AIDS KAP survey instrument which is produced and tested by the International Planned Parenthood Federation (IPPF) (see Appendix 1).

Data was analysed using Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistical analysis was used to generate frequencies, percentages, mean scores, while independent test-test and ANOVA was used to determine the statistical significance between groups (e.g. between first year, second year, third year and fourth year students) on their knowledge, attitudes, and practices within regards to HIV and AIDS. Also, chi-square was used to examine the association

between the categorical variables, such as the association between sociodemographic variables of the participants and their knowledge and attitudes towards HIV and AIDS.

Population – The study population was all undergraduate nursing students of both female and males from first-year to fourth-year level of study who were enrolled in the 2018 academic year. Data received from the school of nursing’s academic officers and the university’s registrar revealed that in the first semester of 2018 academic calendar there were 1018 undergraduate nursing students.

Sample and Sampling – Stratified random sampling technique was used in selecting participants. Consequently, nursing students were stratified based on their year level of study. Then from the four years of study, an equal number of participants (69 from first-year, 69 from second- year, 63 from third-year and 63 from fourth-year) were randomly selected through simple random sampling. The total sample size was 257.

In chapter three the research methodology will be described in detail.

1.10 Outline of the thesis

Chapter 1: provides an orientation of the study.

Chapter 2: provides a review of the literature, theoretical framework and conceptual design. Chapter 3: provides a detail discussion of the research methodology used in the study.

Chapter 4: provides detail presentation and interpretation of results of the study.

Chapter 5: provides a detail discussion of findings of the study.

Chapter 6: provides the conclusions, limitations and recommendations of the study.

1.11 Conclusion

This chapter outlined the background of the study, aims and objectives, the research question and the significance and motivation of the study. Operational definitions of concepts were defined, together with a brief discussion of the research methodology.

In the following chapter a detailed review of the literature and theoretical framework were discussed.



CHAPTER 2

Literature Review

2.0 Introduction

In this chapter, existing literature was reviewed to provide foundational knowledge on the background of HIV/AIDS from global and South African perspectives, HIV epidemic and the burden of the disease, South Africa's intervention on HIV, HIV care, nursing education, and nursing students' readiness for HIV/AIDS care. Lastly, knowledge, attitudes and practices of nursing students related to HIV and AIDS and a theoretical framework is presented.

Polit and Beck (2014) explained literature review to be a critical summary of research on a specific topic of interest, often organized to put a research problem in context. Studies on knowledge, attitudes and practices (KAP) have been widely used to design HIV education programmes in various schools of nursing.

2.1 The search strategy

To cover a wide range of studies, the literature review was done on a number of data bases: Academic Search Complete; EBSCO Host; CINAHL plus full text; Africa Wide Information; ERIC; Nursing Academic Edition; Health Sources: Medline; Health Source; Psych Articles; Google scholar, Pub med, Scopus and the UCT medical library. There were useful articles gathered from searches ranging in dates from 1990 to 2019. But the main target were those articles published in the last five years. In view of the scarce literature regarding nursing students' knowledge, attitudes and practices towards HIV and AIDS in Africa and South Africa, the researcher had to expand the search to a global one with most of the articles being quantitative studies. A few were qualitative and mixed

method studies. The research articles had to be written in English, available in full and, focused on nursing students' knowledge, attitudes and practices regarding HIV and AIDS.

The Publication Manual of the American Psychological Association (APA) style was used to provide guidelines for creating a scholarly style of referencing, such as a consistent format for citing references, creating headings, presenting tables and figures, and the use of non-discriminatory language (Cresswell, 2018). Mendeley, a desktop and web programme was used for managing and sharing research papers, discovering research data and collaborating online. In South Africa, information on KAP of HIV and AIDS is scarce among nursing students, therefore the purpose of the study was to determine undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS. The KAP study was critical in gathering information on Knowledge, attitude as well as practices regarding HIV to improve care for PLWHA.

2.2 HIV and AIDS from global and South African perspectives

According to WHO (2019) the human immunodeficiency virus (HIV) is a retrovirus that affects cells in the immune system, destroying or impairing their function. As the infection progresses, the immune system becomes weaker and the infected person becomes more susceptible to other infections. The most advanced stage of HIV is acquired immunodeficiency syndrome (AIDS). WHO further states that it can take 10 to 15 years for an HIV infection to develop into AIDS, and that antiretroviral drugs can slow the process down (Avert, 2019).

2.2.1 HIV and AIDS on a Global Perspective

In 2018 it was reported that globally more than 74.9 million people had been infected with the HIV virus since the start of the epidemic and that about 32 million people had died of AIDS and a further 770 000 people were estimated to have died from an AIDS-related illnesses (Avert, 2019). Globally,

an estimated 37.9 million people were living with HIV at the end of 2018 (WHO, 2019). According to WHO, new HIV infections are far in excess of the rate required needed to reach the 2020 target. Worldwide, 23.3 million people were accessing antiretroviral therapy (WHO, 2019). WHO states that global efforts to strengthen HIV prevention including treatment programmes are also decreasing the transmission of HIV. Since 2010, the annual number of newly recorded HIV infections (all ages) has reduced by 16% to 1.8 million (WHO, 2019). In 2018, around 1.7 million [1.4 million–2.3 million] were newly infected with HIV, compared to 2.9 million [2.3 million–3.8 million] in 1997, that is new HIV infections have been reduced by 40% since its peak in 1997 (WHO, 2019). The pace of decline in new HIV infections is however, far too slow to reach the Fast-Track Target agreed upon by the United Nations General Assembly in 2016: fewer than 500 000 new infections per year by 2020 (WHO, 2018).

The pace of decline varied by age group and between men and women. Among children, new infections have declined 47% since 2010, while coverage of antiretroviral medicines provided to pregnant women living with HIV to prevent transmission to their children rose from 47% [38–55%] to 76% [60–88%] over the same period (WHO, 2014). In 2018, some nations were able to capture their estimates routine HIV prevalence data from pregnant women who attend antenatal clinics (WHO, 2018). The strategy to using routine data is a vital shift, since it is more sustainable and able to volunteer information on timely and more regular basis (WHO, 2018). The data propose that there was a greater reduction in new HIV infections in some countries such as Swaziland, Mozambique, and Uganda (UNAIDS, 2018). Also, data from Malawi, Zimbabwe, and Zambia's Public Health Impact Assessment surveys contributed to the improved estimates of new infections (UNAIDS, 2018). Approximately 51% (approximately 28.9 million) of their population is female and they are the worst affected by AIDS (UNAIDS, 2018). Worldwide, gay, and other men who engage in sex

with men accounted for 12% of newly recorded infections in 2018, while sex workers and intravenous drug users accounted for between 5% and 8% of newly recorded infections respectively (UNAIDS, 2018). Additionally, data documented by countries across the world indicate that HIV prevalence among key populations (sex workers, people who use drugs, gay men and other men who have sex with men, transgender people and prisoners and their partners) is often substantially higher than among the general population (WHO, 2019).

2.2.2. HIV and AIDS in South Africa (SA)

In 1983, AIDS was diagnosed for the first time in two patients in South Africa. The first recorded Aids-related death occurred in the same year. In 1990, the first national antenatal survey test for HIV found that 0.8% of women were HIV-positive and it was estimated that there were between 74 000 and 6 500 135 people in South Africa living with HIV in 1990 (UNAIDS, 2018). Generally in South Africa, according to statistics, the estimated overall HIV prevalence rate is approximately 13.5% of the South African population (Stats SA, 2019). The total number of PLWHA is estimated at approximately 7.97 million estimates the mid-year population for 2019 (Stats SA, 2019). For adults aged 15 to 49 years, an estimated 19.07% of the population is HIV positive (Stats SA, 2019). The total number of persons living with HIV in South Africa increased from an estimated 4.64 million in 2002 to 7.97 million by 2019 (Stats SA, 2019). HIV prevalence among the youth aged 15 to 24 years has remained fairly stable over time (Stats SA, 2019).

Statistics South Africa (Stats SA) estimates the mid-year population at 58.78 million in 2019. Approximately 51. 2% (i.e., 30 million) of the population is female (Stats SA, 2019). South African life expectancy for those born in 2019 is estimated at 61.5 years for males and 67.7 years for females (Stats SA, 2019). According to Stats SA, South Africa is seeing fewer deaths in an increasing

population. That is, life expectancy is up and mortality rates dropped to 3%. HIV (4.8%) has remained as the fifth biggest killer disease in SA, following TB (6.5%), diabetes (5.5%), other forms of heart disease (5.1%), cerebrovascular disease (5.1%) (Stats SA, 2019). South Africa has implemented a successful prevention-of-mother-to-child-transmission (PMTCT) intervention programme (UNAIDS 2019). Recent statistics showed some positive trends, and the infant mortality rate for 2019 is estimated at 22.1 per 1000 live births (Stats SA, 2019).

Powis et al. (2018) showed a reduction in the number of babies born with HIV in the last decade in Southern Africa which was a major accomplishment. This was attained through the delivery of antiretroviral therapy to breastfeeding and pregnant women with HIV. For example, the number of newly recorded HIV infections in children in South Africa has declined from a peak of 70 000 in 2003 to 13000 in 2017 (UNAIDS, 2018). According to Stats SA (2019), access to antiretroviral treatment has significantly changed the pattern of mortality in South Africa, as evidenced in the decline of AIDS related deaths post 2006 (Stats SA, 2019).

2.3. HIV epidemic in South Africa

South Africa has the largest HIV epidemic in the world. An estimated 230 000 people contract HIV every year and, of these, young women are the most affected (Stats SA, 2019). According to Stats SA (2019) Gauteng comprises the largest share of the South African population, with approximately 15.2 million people (25.8%) living in this province. HIV and AIDS prevalence in this province is 15.2% (Stats SA, 2019). KwaZulu-Natal is the province with the second largest population with an estimated 11.3 million people (19.2%), with an HIV and AIDS prevalence of 25.8% (Stats SA, 2019). With a population of approximately 1.26 million people (2.2%), the Northern Cape remains the province with the smallest share of the South African population, with an HIV and AIDS prevalence

of 9.2% (Stats SA, 2019). Free State province with a population of approximately 2.495 million people has the second smallest share of the population constituting 4.9 %, with an HIV and AIDS prevalence of 18.5% (Stats SA, 2019). North West province has a population of approximately a million people (6.6%), with an HIV and AIDS prevalence of 17.7% (Stats SA, 2019). Also, Eastern Cape province has a population of approximately 6.56 million people (11.4 %), with an HIV and AIDS prevalence of 15.2% (Stats SA, 2019). Limpopo province has a population of approximately 5.405 million people (10.2%), with an HIV and AIDS prevalence of 13.7% (Stats SA, 2019). Further, Western Cape province has a population of approximately 6.79 million people (11.6%), with an HIV and AIDS prevalence of 5.3% (Stats SA, 2019). Lastly, Mpumalanga Province has a population of approximately 4.04 million people (7.8%), with an HIV and AIDS prevalence of 5.3% (Stats SA, 2019).

WHO guidelines have recommended the provision of antiretroviral therapy to all people diagnosed with HIV, regardless of their CD4 count, when they are willing and ready for treatment. This has become known as the Universal Test and Treat (UTT) approach (WHO, 2014). In September 2016 UTT became the national policy for the provision of antiretroviral therapy in South Africa. According to UNAIDS by 2018 more than 4.5 million people were taking ARVs in SA (UNAIDS, 2018). That is important progress, but the South African government acknowledges that more needs to be done and the national response needs to be accelerated if South Africa is to achieve the goal of ending HIV as a public health threat by 2030 (UNAIDS, 2018). According to Deputy President David Mabuza there are more than two million South Africans who are living with HIV who do not use antiretroviral (ARV) treatment because they are scared of being discriminated against (SANAC, 2018).

2.4 Burden of HIV

The burden of HIV in South Africa varies greatly across the country by age and gender, and for different key and vulnerable populations (UNAIDS, 2018). According to Rao et al. (2018), among key populations such as female sex workers (FSWs), men who have sex with men (MSM), people who inject drugs (PWID) and clients of FSWs, transgender people and incarcerated population, bear a disproportionate burden of HIV. Further states that key populations have been understudied, especially in the broadly generalized HIV epidemics. However, the South African National LGBTI HIV Plan, 2017-2022 is a milestone in the country's response to HIV, AIDS, STIs, and TB for lesbian, gay, bisexual, transgender, intersex people (SANAC, 2018). According to UNAIDS (2019), gender inequalities and harmful gender norms are powerful drivers of the AIDS epidemic and they are major obstacles to ending AIDS (UNAIDS, 2019). In Sub-Saharan Africa, the severe impact of HIV on women and girls is well known and the AIDS epidemic has a largely female profile (UNAIDS, 2019).

2.5 South Africa's intervention on HIV

Many countries, including South Africa, have implemented population-based household surveys to estimate HIV prevalence and the burden of HIV infection (Shisana et al., 2014). Most household HIV surveys are designed to provide reliable estimates down to only the first subnational geopolitical level which in South Africa, is composed of nine provinces (Gutreuter, 2019). South Africa has the largest burden of HIV and AIDS, and is currently implementing antiretroviral treatment (HSRC, 2019). It is therefore fitting that South Africa was the first country in the world to conduct a national HIV population-based survey (in 2002 and was repeated in 2005, 2008, 2012 and 2017) to help monitor the country's response to the HIV and AIDS epidemic (HSRC, 2019). The HSRC report includes behavioural information at a provincial level.

The National Strategic Plan (NSP) is a most welcome development as the success of the implementation of the HIV and AIDS and STI strategic plan for South Africa 2017-2022 (NSP) will ultimately be judged on what happens in terms of social and behavioural change at provincial, district and local government level to strengthen the combat against HIV and AIDS (NSP, 2017-2022). In the NSP report, the authors find that South Africa has succeeded in rolling out treatments to people living with HIV and AIDS and also reported that knowledge levels have declined accompanied by increasingly risky sexual behaviour (SANAC, 2018). Knowledge of HIV will decrease if there are no programmes on TV related to HIV as there previously used to be. The TV programme Shuga, for example, now only appear on DSTV. NSP findings show that there are still high rates of new HIV infections occurring in South Africa, and that South Africans need to double their efforts to prevent new infections (SANAC, 2018). The NSP further states that the high incident amongst young women aged between 15 and 24 years is troubling and calls on us to address the associated social factors such as age- desperate relationships (SANAC, 2018). The continued high HIV prevalence and incident in the black African population, particularly amongst females aged 20 to 24 years and males aged 25 to 49 years is a serious call for us to design and implement targeted interventions aimed at these groups, over and above the comprehensive interventions for the population at large (SANAC, 2018). All in all, these women are facing a greater HIV burden. The researchers also show that people in the informal areas in South Africa continue to be most at risk. This suggests that a strong multi-sectoral approach is necessary if we want to address social and economic challenges that continue to fuel the epidemic (HSRC, 2019). There are policies such as the UTT, which immediately puts people on treatment when they test HIV positive. However, people are scared to get ARVs because of the fear of discrimination (UNAIDS, 2014). The researcher agrees, South Africa still has a long way to go in the fight against stigmatization of HIV positive people. As a society, we have become much

more sophisticated in our response to the AIDS epidemic but we still have a long way to go to in dismantling stigma and discrimination to reach the global target of ending AIDS by 2030 (WHO, 2018).

By 2018 more than 4.5 million people were taking ARVs in South Africa (Stats SA, 2019). This is important progress, but the government acknowledges that more needs to be done and the national response needs to be accelerated if the country is to achieve the goal of ending HIV as a public health threat by 2030 (WHO, 2019). According to the South African National AIDS Council (SANAC, 2018), the Minister of Health Dr Motsoaledi, emphasized that it is by means of knowledge and action that South Africans will be able to prevent new HIV, TB and ST infections. However, there is a contradiction in that, programmes that used to help people understand HIV are no longer broadcast, and if they are (e.g., like the TV series Shuga), they only appear on pay channels such as DSTV. HIV related programmes are not available at most higher education institutions or healthcare institutions, and the few pamphlets related to HIV that used to be available have faded away (Frain, 2017). The lack of information about HIV perpetuates fear, stigma, and discrimination, so the priority should be empowering people, by providing them with information, and not assuming that they are now empowered, or that they are tired of hearing the same information repeated continuously (Avert, 2019). Basini (2013) suggests that HIV and AIDS affects an institution through its impact on the individuals who comprise it, students, academic staff, support staff and ancillary staff. Basini (2013) further states that HIV and AIDS is a pandemic whose effect on communities is without precedent in recorded human history.

2. 6 HIV care provision

According to Hartnell College (2019) interprofessional competency should be considered in order to provide patient-centered care. Nurses and other healthcare workers are involved patient- centred, which means treating PLWHA with dignity and respect. NAH also supports HIV positive people to develop the knowledge, skills as well as confidence they need to better manage their own health. This helps build trusting relationships and helps to meet the emotional, social and practical needs of HIV positive people which, in turn, ensures they maintain a high quality of life (Hartnellcollege, 2019).

However, nursing is a stressful job where distressing situations are common but where nurses nevertheless, have a duty to care. Nursing students and nurses are finding it challenging to take on the greater demands being put upon them and sometimes feel helpless which creates burnout, frustration, and stress (Routson, 2010). Frain (2015) agree that nurses and nursing students must be empowered with updated comprehensive HIV and AIDS knowledge.

Nursing students must also be taught leadership skills. A good nurse is someone who can inspire others to work together in pursuit of a common goal, such as enhanced patient care for PLWHA, therefore it is important to develop leadership skills among nurses, nursing students and other healthcare workers (Dyess et al., 2016). An effective leader has a distinctive set of personal qualities: integrity, courage, initiative and an ability to handle stress. Empowering nursing students to utilize evidence for better patient care can make a difference and making critical thinking work for nursing students (Iradukunda, 2016). Evidence-based practice Evidence Best Practice (EBP) enables nurses to use scientifically proven evidence for care (Fiset et al., 2017; Lehane, 2019; Friesen-Storm et al., 2017).

Nurses are the cornerstone of healthcare systems, because they play a critical role in addressing the needs of the people, and therefore their education is crucial (IUSS, 2014). There is an urgent need to improve the level of knowledge and attitudes among nursing students towards HIV and AIDS as they have a key role to prevention, care and treatment in their future career as nurses (Dharmalingan et al., 2015). The nursing programmes can be reorganised to keep nursing students posted with updated HIV information (Modeste, 2015). Other studies show that student nurses themselves have reported the need for restructuring in their training with respect to HIV care and management (Kok et al., 2018; Ngcobo & Mchunu, 2019). There is a need for collaboration between nurse educators, professional nurses and clinical preceptors for the quality clinical facilitation in the clinical skills laboratory and in the clinical learning environment to assist in theory – practice integration of HIV and AIDS (Muthathi et al., 2017).

2.7 Nursing education in South Africa

In nursing education, there are five stakeholders: the health sector, the health consumer, the nursing profession, the student-learner, and the educational provider (SANC, 2014). A nursing school or nursing education institution, refers to any institution where individuals are educated and trained for the profession of nursing (SA Nursing Act 33, 2005). A nursing school is accredited as a nursing education institution with the South African Nursing Council under the section 42 of the Nursing Act, 2005. The programme offers a comprehensive four-year programmes with pathways of general, midwifery, psychiatry and community nursing.

In South Africa, Modeste (2015) chose a similar approach to that which was developed in Tanzania and Haiti, a contemporary curriculum (i.e., an approach that depends on competency) which seeks to strengthen nursing education in HIV care and management in nursing schools. The undergraduate

nursing programme is a registered qualification of South African Qualifications Authority (SAQA) and is offered over four years in accordance with South African Nursing Council regulation R425 (SAQA 2009).

Studies addressing the unknown problem of undergraduate nursing students' knowledge, attitudes and practices despite HIV and AIDS information being embedded in their education and training (Kok et al., 2018; Ngcobo & Mchunu, 2019; Ouzouni & Nakakis, 2012; Serwaa, 2017). Modeste (2015) suggested that integration should be encouraged in teaching and learning instead of assuming that students will integrate the knowledge themselves. Nursing students should be given an opportunity to be involved and decide on what aspects of HIV and AIDS to learn about, so that they can translate HIV education into reality.

Modeste (2015) developed a model to integrate HIV and AIDS core competencies into the undergraduate nursing curriculum at UWC. The UNAIDS Secretariat Competency Framework defines competencies as the skills, attributes and behaviours that one is expected to demonstrate as an effective staff member (UNAIDS, 2015). It is not just about what we do, but how we do it. Gagnon and Cator (2015) reinforce the importance of incorporating education and training in entry-level programmes with actual clinical experiences and with exposure to people living with HIV.

Other researchers strongly believe that higher education AIDS (HEAIDS) needs to mount a prompt and aggressive response to curb the epidemic against youth in higher education institutions (Modeste, 2015; Modeste & Adejumo, 2015; Ngcobo & Mchunu, 2019; Van Wyk & Pieterse, 2006). HIV and AIDS programmes have the power to fight the crisis of HIV and AIDS. Nursing students enter tertiary education with some basic knowledge of HIV and AIDS, which has been obtained from sources such as primary and secondary education, society and the media (Balpande et al., 2014). However, nursing

students need to be given updated HIV information at HEIs. A number of studies (Modeste, 2015; Modeste & Adejumo, 2015; Naidoo et al., 2018) have highlighted the need to enhance and integrate HIV education into the core curriculum in nursing schools. The main goal of HIV and AIDS education in nursing schools is to equip nursing students with the right information needed to provide effective care to PLWHA and at the same time to protect themselves against HIV infection (Modeste, 2015). There is a definite need to inform nursing students about HIV and AIDS so that they have more than just a moderate understanding of HIV and AIDS.

Other authors have suggested that further studies, on wider scale should be undertaken in order to obtain a better and a more general overview of the attitudes, perceptions and awareness of undergraduate nursing students towards AIDS (Mtengezo et al., 2016; Serwaa, 2017). In the mediation model, HIV knowledge cannot influence HIV attitudes and practices directly, and instead does so by means of a school of nursing, as a 'middle man'. Other researchers believe that continued educational programmes are also needed to improve nursing students' knowledge and competence in providing a culturally sensitive, rights-based approach to care for HIV and AIDS patients (Dharmalingan et al., 2015; Modeste, 2015). The systematic education, information giving, administrative, technical and psychological support is mostly needed for nursing students who care for people with HIV (Stavropoulou et al., 2011). According to Taher and Abdelhai (2011) a planned HIV and AIDS education programme significantly improved the HIV and AIDS knowledge, and to a lesser extent the attitudes towards patients with HIV and AIDS. Various studies have reported that misconceptions about the routes of HIV transmission still exist (Dharmalingan, 2015; Kok et al., 2018). Goel et al. (2010) stated that generating knowledge and awareness regarding HIV and AIDS in nurses and nursing students is crucial for AIDS management and the prevention of the spread of HIV. Indeed, intensive and interactive HIV and AIDS education can contribute to the national

educational effort by increasing the knowledge and improving the attitudes of nursing students towards, and willingness to provide, nursing care for patients with HIV and AIDS (Goel et al., 2010).

A South African study by Ngcobo and Mchunu (2019) found that the students expressed a need for more education on the topic of HIV and AIDS as they found themselves challenged in providing effective HIV and AIDS healthcare management. The study states that there has been increasing attention to the issues of HIV and AIDS and its potential impact on education. Modeste (2015) states that not much has been written about the importance of education in building literacy and providing life skills as a strategy for strengthening the effectiveness of HIV prevention. It is important to evaluate the knowledge, attitudes, skills and practices of nursing students with respect to what HIV and AIDS policy interventions are needed in the education sector (Esewe et al., 2017).

In mediation model, HIV knowledge cannot influence HIV attitudes and practices directly, and instead does so by means of the school of nursing, as a 'middle man'. According to Benjakul (2006), the current and upcoming generations of nurses must be prepared and ready to work in numerous healthcare delivery settings, this will require nurses with the necessary knowledge and experience in caring for HIV and AIDS. Ouzouni and Nakakis (2012) noted that healthcare professionals involved with nursing students during their clinical allocation have to provide practice-based education and examples in respect of the measures needs to be taken, to protect healthcare professionals from HIV contagion. Modeste (2015) adds to this by stating that there is a need to teach students to apply the knowledge they have learnt to their own lives for prevention as well as self-management, and to also develop competencies that will assist new graduates to cope with the emotional effect of dealing with HIV and AIDS in their workplace after graduation.

Health education is a priority in South Africa in HEI. Health education gives people the information required to take care of themselves. This view reflects the WHO (1984) view of health education as a process, which enables people to have increased control over their health. Education and information on HIV are factors that affect nursing students' level of preparedness to interact with PLWHA (WHO, 2019). Similar studies showed that nursing students had a rather moderate level of knowledge related to issues of HIV and AIDS (Iwoi et al., 2017; Kok et al., 2018).

2. 8 Nursing students' readiness for HIV and AIDS care

Researchers believe that present and forthcoming generations of nurses must be groomed to be willing to work in numerous healthcare delivery settings that will require nurses with the latest in HIV and AIDS knowledge and experience in caring for PLWHA (Dharmalingan et al., 2015; Frain, 2017; Modeste & Adejumo, 2015). A number of studies revealed that most participants expressed a willingness to care for individuals infected with HIV (Akansel et al., 2012; Errikson & Grundin, 2010, Kok et al., 2018; Taher & Abdelhai, 2011). Willingness to care for HIV infected patients was positively associated with age, confidence in protecting themselves against infection, and with negative attitudes towards HIV (Akansel et al., 2012). Errikson and Grundin (2010) concluded that the impact of education on nurse's preparedness to care for patients with HIV and AIDS should be examined and the risk of occupational HIV transmission must be discussed, for example needle stick injury and post exposure prophylaxis (Dharmalingan et al., 2015; Marranzano et al., 2013).

Most studies revealed that nursing students had fear of contagion. That is, getting infected is one of the fears of nursing students while caring for PLWHA (Akansel et al., 2012; Errikson & Grundin, 2010; Taher & Abdelhai, 2011). AIDS is a terminal illness that can generate a fear of dying because it is a dreadful and non-curable disease. Occasionally the media exposes wasted and dying AIDS

patients who are in their last stages which then induces great fear in nursing students despite them being equipped with extensive HIV and AIDS knowledge which places them in a dilemma and fear (Geiling, 2013).

In the education and healthcare sector, HIV and AIDS policy interventions are required, to strengthen disclosure policy to maintain confidentiality and avoid gossip and malicious comments and to make sure that nurses, including nursing students, understand the policy. Nursing students need to understand and practice Voluntary Counselling and Testing (VCT) in order to improve counselling so that they are able to appropriately and sensitively counsel people infected and affected by HIV. Nursing students were keen to go for VCT training if offered (Sambah et al., 2018). Therefore, positive reactions should be reinforced, when nursing student showing interest in taking care of and showing empathy towards PLWHA by inviting guest speakers who are HIV positive. Nursing students who are not willing to take care of PLWHA need to be reminded of their ethical obligation as nurses; promoting health, prevention of disease and alleviating suffering.

Knowledge possessed by nursing students refers to their understanding of any given topic on HIV and AIDS. It was reported that none of the students answered all questions and statements on the HIV and AIDS knowledge scale correctly, therefore there were gaps in the knowledge of the students regarding HIV and AIDS (Errikson & Grundin, 2010). The gaps in knowledge among nursing students must be reduced by making sure that all programmes in their curriculum related to HIV must be implemented as planned by course programmers (Modeste & Adejumo, 2015). During the supervision of nursing students, lecturers and clinical supervisors need to take responsibility for the dissemination of HIV and AIDS information, to do this they should spend extra time on HIV and AIDS issues like essay writing, public lectures, inviting people living with HIV and AIDS to address

the students in order to counteract the media continuously showing people in the final stages of HIV and AIDS.

Knowledge of nursing students related to HIV and AIDS

Knowledge possessed by nursing students refers to their understanding of any given topic on HIV and AIDS. It was reported that none of the students answered correctly to all questions and statements on the HIV and AIDS knowledge scale, therefore there were gaps in the knowledge of the students regarding HIV and AIDS (Dharmaligan et al., 2015; Errikson & Grundin, 2010; Kok et al., 2018).

Some studies reveal, misconceptions, fear of infection and prejudicial attitudes towards PLHWA (Akansel et al., 2012; Errikson & Grundin, 2010; Marranzano et al., 2013; Taher & Abdelhai, 2011). Nursing students lacked some knowledge regarding issues such as HIV transmission (Alotaibi et al., 2016; Akin et al., 2013; Dharmaligan et al., 2015; Eriksson & Grundin, 2010; Iwoi et al., 2017; Memish et al., 2015; Serwaa, 2018). Therefore the KAP study will provide relevant information to the training institutions on strengthening HIV and AIDS courses in the nursing programme. The knowledge gaps that were identified could also inform curriculum design to enhance and intensify the HIV and AIDS training for nursing students (Basini, 2013; Modeste, 2015).

2.9 Attitudes of nursing students related to HIV and AIDS

According to Ajzen (1991), attitude is the first determinant of behavioural intention that is, attitude is the degree to which the person has favourable and unfavourable evaluation of the behaviour in question. Modeste and Adejumo (2015) and Ouzini and Nakakis (2012) put across that, nursing students need to have appropriate attitudes and knowledge about HIV and AIDS because nursing students are future healthcare professionals who will play a key role in the prevention of the spread of HIV and the care of PLWHA.

Various researchers believe that nursing curricula need to be restructured to ensure that students gain the requisite knowledge and appropriate attitudes about HIV and AIDS (Akansel et al., 2012; Modeste, 2015). Modeste (2015), designed and developed a model to be integrated into the nursing programs. Modeste (2015) stated that the newly developed model is flexible, allowing for further adaptation into any other nursing programme at the undergraduate level, and offers the potential to support in the systematic integration of HIV and AIDS into other nursing curricula. This would enhance new graduate's competencies in the provision of HIV and AIDS related care and management after graduation.

In nursing practice, competence entails an application of an amalgamation of knowledge, skills, performance, values and attitudes and it also combine behavioural and psychological constructs, expertise, experience and patient preferences (Fukada, 2018; Nehrir, 2016; Modeste, 2015). A nurse provides all aspects of holistic care, and such competencies should be properly measured and assessed. Akansel et al., (2012) and Toker and Kucukylmaz (2001) put forth that after education, it is even harder to change attitudes and behaviours towards AIDS. They hypothesised that knowledge of HIV and AIDS alters the attitudes of nursing students and improve their ability to deal with HIV and AIDS. With the exception that despite their knowledge about how AIDS is transmitted, students are still afraid of contracting AIDS, students tend to have high levels of empathetic attitudes but also high levels of refraining attitudes (Errikson & Grundin, 2010). In order to reduce stigma and discrimination about HIV and AIDS, nursing students can sensitively share, prevention and treatment methods but need effective communication skills and the ability to refer clients if they cannot provide help.

According to Ajzen (1985) attitudes refers to the feelings towards HIV and AIDS, as well as any preconceived ideas that nursing students may have towards HIV and AIDS including PLWHA. With regards to attitudes, Eriksson and Grundin (2010) argued that students tend to have high levels of empathy, but also high levels of refraining attitudes which indicates that the most students were willing to care for people with HIV and AIDS even though refraining attitudes were present. The theory of planned behaviour states that together, attitudes toward behaviour, subjective norms, and perceived behavioural control, shape an individual's behavioural intentions and behaviours (Ajzen, 2006).

Hypothetically speaking attitude can be altered by increasing knowledge about HIV and AIDS amongst nursing students (Eriksson & Grundin, 2010). Indeed, nursing students in order to reduce stigma and discrimination about HIV and AIDS, can, sensitively share, prevention and treatment methods with clients, but need effective communication skills to refer clients onwards if they cannot provide help (Farotimi et al., 2015).

Researchers concluded that attitudes are perhaps driven by a lack of control over the disease, (Bektas & Kulakac, 2007). Despite progress made in the treatment and care of PLWH, HIV related stigma has remained a concern. Stigmatizing attitudes towards people living with HIV and AIDS are still present amongst healthcare personnel and nursing students (Atav et al., 2015).

2.10 Practices of nursing students related to and HIV and AIDS

Researchers reported that some of students would prefer not to work with AIDS patients even though they have been educated in respect of HIV (Akin et al., 2013; Davtayn et al., 2017). Given a growing crisis in the nursing profession, there is an outcry that nurses have negative attitudes towards HIV patients in hospitals and clinics (Dapaah, 2016). This involves an increased questioning of

professional integrity as well as an increasing need for reflective practices. However, when nursing students sharing their feelings about their difficult experiences and reflect on what worries them the most, mentioned HIV (Akansel et al., 2012; Akin et al., 2013; Alotaibi & Alabbas, 2016; Davtayn et al., 2017; Dharmaligan et al., 2015; Eriksson & Grundin, 2010; Iwoi et al., 2017; Memish et al., 2015; Serwaa, 2018). According to Frain (2017) and Ngcobo & Mchunu (2019), these nursing students need a degree of fearlessness to write with honesty about their difficult experiences with HIV and AIDS. Most studies reported nursing students' fear of contracting HIV, with the story being the same after four decades (Akin et al., 2013; Davtayn et al., 2017; Errikson & Grundin, 2010; Toker & Kucukylmaz, 2001).

South Africa 's National Strategic Plan on HIV emphasized that a comprehensive prevention programme that addresses the various aspects of HIV and AIDS, at hospitals and tertiary institutions, will prevent the stigma and discrimination often associated with HIV specific programmes. AIDS related stigma and discrimination is the greatest barrier for people living with HIV and AIDS, this in turn leads to isolation and deprives them from their basic human rights, care and support, and worsens the infection (Avert, 2019).

Fook (2006) suggested that nursing educators need to take responsibility for the learning environment of undergraduate nursing students, to establish a culture in which it is safe and acceptable to be open and to expose professional vulnerability to these students in order to give them psychological support. According to Fook (2006), nursing educators all need to ask how they can best produce a climate for critical reflection in the settings within which they work, so that nursing students begin to critically reflect on their own practices. Clinical supervisors teaching students practical skills and lecturers teaching students theory should engage students in their classes to discuss their training and the HIV

and AIDS curriculum, as educators they should also encourage them to adopt a critical attitude towards their practices. According to Allen and World Health Organization (1977), nursing is considered as a scientific approach that is derived from the expertise of the disciplines and advanced directly approved nursing processes inappropriate conditions.

Other authors believe it is important that students be exposed to critical thinking, ethical analysis and reasoning and provided with pertinent resources to develop these skills as early as possible in their training, and that these skills can then be used to develop professionalism that will help students be prepared when they eventually face complex decisions in a range of different situations from the patients' bedside to policy (Modeste, 2015; Ngcobo & Mchunu, 2019).

Inuwa et al. (2017) and Sehuma et al. (2012) suggested that further studies need to be carried out to assess undergraduate nursing students' current knowledge of issues related to HIV prevention, for an example VCT, and their attitudes towards PLHWA. They believe in establishing a culture of safety and providing appropriate professional education, to help reduce the stigma towards infected patients and improve the quality of care (Inuwa et al., 2017; Sehuma et al., 2012). Serwaa (2018) proposed that "more studies should be conducted throughout South Africa to further assess nurses' knowledge, attitude including practices towards HIV and AIDS."

2.11 Theoretical framework Introduction

A theoretical framework is based on propositional statements resulting from an existing theory while a conceptual framework is one that the researcher has developed through identifying and defining concepts and proposing relationships between the concepts (Brink et al., 2012). According to Burns et al. (2015), and Cresswell and Cresswell (2018), a theoretical framework is the structure that can hold or support the theory of a research study. Theories are formulated to describe, explain, predict

or control, and understand phenomena and, in many cases, to challenge and extend existing knowledge.

A brief description of the theory: The theoretical model employed in this research is based on the 1985 theory of planned behaviour (TPB). It was used in guiding and the interpretation of results of the study. The role of theory in empirical research is that, in testing a set of related statements that describes or explains phenomena in a systematic way, the researcher develops confidence that some parts of it are true (Brink et al., 2012). Moreover, norms are valuable constructs for predicting behaviour, and understand such behaviours. Continued use of the TRA/TPB framework has value, but does little to further our theoretical understanding of norms (Shulman et al., 2017).

According to Ajzen and Fishbein (1980), TRA is a special case of TPB and the only difference between the two theories is that the TPB includes behavioural control as an additional determinant of intentions and behaviour. TRA finds application if problem space involves understanding and changing behaviour of nursing students. According to Changyong et al. (2014), a problem space is a subject's internal representation of a task environment, and not the task environment for problem solving. For example, in a problem-solving experiment, the experimenter gives instructions and stimulation to the subject.

TPB is a theory that links one's beliefs and behaviour (Ajzen & Fishbein, 1980). TPB and TRA explains that human behaviour results from the complexity of relationships among beliefs, attitudes, intentions and behaviour (Ajzen & Fishbein, 1980). In this framework, it is posited that behavioural beliefs and intentions influence an individual's attitude (Benjakul, 2006). TPB is an extension of TRA and the concept of TPB was proposed by Icek Ajzen to improve the predictive power of TRA by including perceived behavioural control (Ajzen & Fishbein, 1980).

Quantitative research is often concerned with the idea of the prediction of behaviour (Newell & Burnard, 2011). Nursing students' beliefs can be changed by empowering them with comprehensive HIV related education. Other studies have shown that nursing students' beliefs of ethical obligation and intentions not to do harm to PLWHA were considered (Akansel et al., 2012). The application of the theory of TPB guided this study. The TPB is directly related to the general concept of the study, and comprises six constructs: attitudes, behavioural intention, subjective norms, social norms, perceived power and perceived behavioural control that, collectively, represent a person's actual control over behaviour (Conner & Sparks, 2005). TPB deals with behaviour where individuals that do not have complete faculty over their will, or where they have incomplete control of their behaviour (Ajzen, 2006).

The following figure is a schematic representation of the Theory of Planned Behaviour

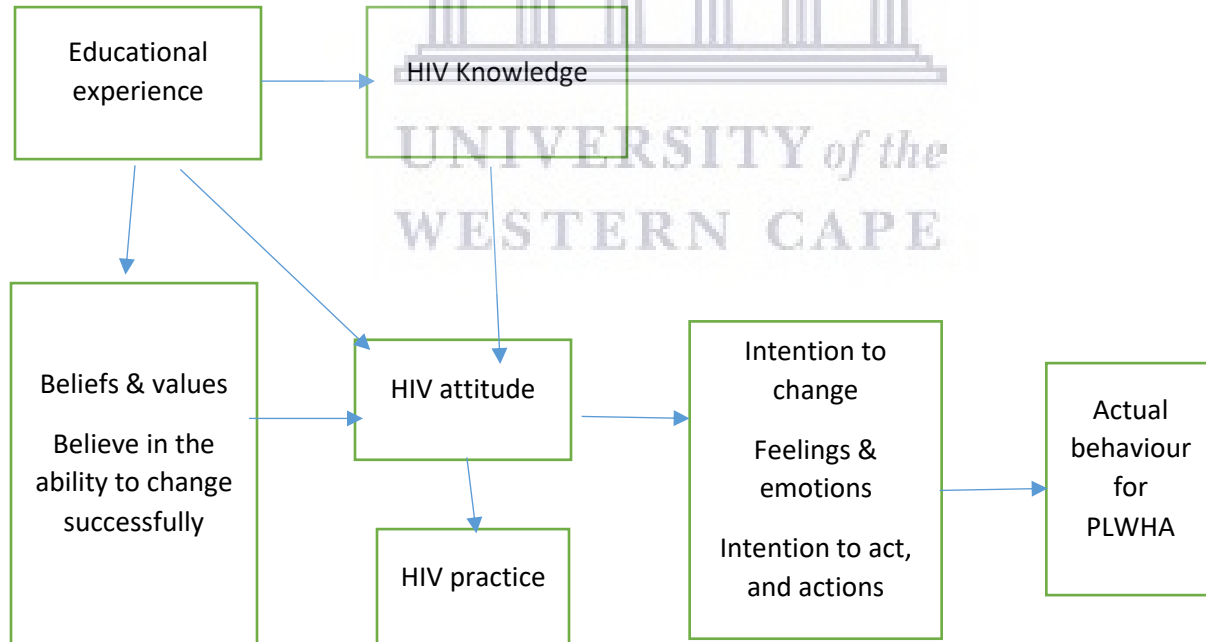


Figure 2.1. Adapted from (Ajzen, 1985, 1991, 2006 ; Fishbein & Ajzen, 1980)

Research findings suggest that theory does explain or account for current conditions or circumstances. The study reveals a finding that is significantly congruent with what the theory attempts to explain or predict. It also reveals that the theory overly generalizes behaviours or actions without taking into consideration specific factors such as skills, unconscious habits and restricted environment. TPB predicts social determinants of education, educational levels are linked with good health, less stress and self-confidence which can lead to empathetic attitudes.

According to Behr (1983) a great deal of research in human sciences was concerned with measuring the association or interrelations between two or more variables. For example, how HIV knowledge is related to HIV attitudes, or the extent of the association existing between the number of years spent studying nursing full time and doing practical skills related to HIV and AIDS.

TPB helps programme implementers to design interventions that effectively address a particular behaviour. This study showed nursing students had fear of contagion. TPB is composed of: attitude towards the behaviour, social factor called subjective norms and an added variable which is the degree of perceived behavioural control (PBC) (Ajzen, 2006). All main components of the theory (TPB) were measured by the KAP questionnaire that is attitude toward behaviour, subjective norms, perceived behavioural control and intention. A Likert style format or pseudo Linkert scale was used measuring nursing students' attitudes or opinions, using agreement, frequency scales. Therefore, it involves the formulation of items or statements that the researcher believes represent the concept being measured, without going through the necessary steps to generate and validate items and the score of each item is usually reported individually (Parahoo, 2014).

According to Ajzen (1991), behavioural intention is an indication of how hard people are willing to try and how much effort they are planning to exert, in order to perform the behaviour. The three types

of beliefs that tend to guide human behaviour, (behavioural, normative and control beliefs) were considered (Ajzen, 2006). Assumptions of TPB are that human beings are rational and make systematic use of information at their disposal. Generally, people consider the outcome of their actions before they decide to initiate certain behaviours. Nursing students believe that they are expected to ethically comply with their duty: as nurses, to care, even if they are not comfortable as a result of subjective norms or normative beliefs to perform a certain behaviour (Ajzen, 2006). The assumption is also made that perceived behavioural control predicts actual behavioural control and this may not necessarily be the case.

In this study nursing students were prepared to care for PLWHA, but other studies revealed that some nursing students were not willing to take care of HIV infected people, and were even prepared to resign from the nursing profession rather than to serve PLWHA (Akin et al., 2013; Atav et al., 2015). Therefore it should always be remembered that many outside factors can prevent one from carrying out a particular behaviour, even if they had the intention to do so. Based on this study, it is concluded that nursing students' attitude, subjective norm and perceived behavioural control has a direct, positive association with behavioural intention to attend VCT training for serving PLWHA.

2.12 Conclusion

Most results from other scholars revealed that in general, nursing students had positive attitudes towards PLWAHA. However, they expressed some concerns and were hesitant about working with PLWHA because of the fear of contagion. Overall, nursing students still have misconceptions, misinformation and gaps in their knowledge, and their attitudes need to improve to provide nursing care for PLWHA. The study was guided by TPB, and suggested an association between knowledge and attitudes. TPB is the integrated model of behaviour prediction. It was appropriate to use it in

order to predict and understand intentions, behaviours and outcomes of health related behaviours. For instance, nursing students had stronger intentions to perform a particular behaviour; preparedness to take care for PLWHA. Also, it was to guide this study by showing how HIV knowledge is associated with undergraduate nursing students' attitude and practice towards HIV and AIDS, such as self-efficacy, voluntary HIV testing, condom use, empathetic attitudes or refraining attitudes towards PLWHA, volitional and actual control, that is, the actual wilful control over behaviour and a person's control over behavioural factors readily available resources, VCT training and other behaviours such as destigmatizing attitudes towards PLWHA. Now the KAP are known it will be easier for programme planners to design effective interventions to address the fear of contagion and other behaviours among nursing students and ensure that education programmes about HIV and AIDS are relevant to clinical practice. In the available literature there are few follow-up studies, especially among those that did research on first-year nursing student.

The next chapter focuses on the research methodology



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CHAPTER 3

Research methodology

3.0 Introduction

This chapter presents the methods used in this study. It describes the research design, study setting, population and sampling, it also describes the instruments used, the procedure for data gathering and the statistical analysis of the data. The purpose of the study was to determine undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS. A quantitative (deductive) approach was employed. Claydon (2015) states that quantitative research has advantages in nursing, since it can provide analytical data to help answer questions encountered in everyday practice. In this research it was used in assessing the level of knowledge, attitudes and practices of undergraduate nursing students regarding HIV and AIDS.

3.1 Quantitative research methods

Quantitative research methods is a formal, objective, rigorous, systematic processes used to describe variables, test relationships between them, and examine cause and effect interactions among variables (Parahoo, 2014). It deals in numbers, logic, and an objective stance. Claydon (2015) states that quantitative research methods has advantages in nursing, since it can provide numerical data to help answer questions encountered in everyday practice. According to Creswell and Creswell (2018), a quantitative research methods enables a strategy of inquiry to uncover new knowledge in a field where very little is known. This study sought to examine knowledge, attitudes and practices of undergraduate nursing students toward HIV and AIDS at a higher education institution in the Western Cape province of South Africa.

3.2 Research design

The research design is the overall plan to gathering data in a research study, therefore provides specific direction for a study (Creswell, 2014). The study employed a quantitative, descriptive, and survey design which enabled the researcher to examine and describe nursing students' knowledge, and attitudes including practices regarding HIV and AIDS.

3.2.1 Descriptive research design

Descriptive research design is research that typically has as its main objective, the accurate portrayal of people's characteristics or circumstances and/or the frequency with which certain phenomena occur (Polit & Beck, 2018). According to Parahoo (2014), in descriptive studies, the researcher describes phenomena about which little is normally known. Parahoo (2014) further states that from the data collected, patterns or trends may emerge and possible links between variables can be observed, but the emphasis is on the description of phenomena. Descriptive research was suitable for this study because the participants answered questions administered through questionnaires and thereafter, the

3.2.2 Survey research design

Survey research designs are procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviors, or characteristics of the population (Polit & Beck, 2018). In this study, the researcher collected quantitative data using questionnaires and statistically analyzed the data to describe nursing students' responses to HIV questions and to test research questions. According to Creswell and Creswell (2018), survey refers to a study that has used a representative sample.

3.3. Study Setting

Study setting is a location for conducting research, it may be natural, partially controlled or highly controlled (Gray et al., 2017). It is the environment in which research is carried out. It can also be seen as the physical, social and cultural site in which the researcher conducts the study. The research setting for this study was at an accredited nursing school in the Western Cape metropole region, South Africa. The Western Cape is a province of South Africa, found to the south- western coast of the country. It is the fourth largest province and the third most populous, with an estimated 6 million inhabitants in 2019 (Stats SA, 2019). Approximately two-thirds of the population live in Cape Town, which is also the provincial capital (Stats SA, 2019). The School of Nursing is located in the Community and Health Science faculty and is one of the biggest nursing schools in the country. Currently the school has more than 1000 nursing students in its undergraduate programme.

3.4 Study Population

A research population is described as the entire set of individuals or objects having the common characteristics (Polit & Beck, 2018). In this study, the study population comprised of full-time undergraduate bachelor of nursing students, who are taught the theoretical content and practical skills from first to final year. They receive a course study, which is a programme of education and training at an approved nursing school for registration as a nurse (general, psychiatric and community) and midwife in terms of Section 16 of Government Notice No. R425 as amended by No. R.1312, No. R.2078 and No. R.753 (SANC, 2019). All year levels of study were included in this research, from first to fourth-year. The population was 1018 undergraduate nursing students, 41 which comprised 280 first-years, 307 second-years, 224 third-years, and 207 fourth-year nursing students.

3. 4. 1. Sampling

A proportion or subset of the population is known as a sample of a population and is the total number of units, such as individuals, organizations, events and artefacts from which data can potentially be collected (Parahoo, 2014). According to Burns et al. (2015), sampling is a process of selecting participants, behaviors, events, or elements for participation in a study. Creswell (2014) recommended selecting a random sample in which each individual in the population has an equal probability of being selected. In addition, random sampling methods usually provide a sample that is representative of a population (Burns et al., 2015). The sampling method used in this study was a stratified random sampling, which entails the random selection of study participants from two or more strata of a population (Polit & Beck, 2018).

According to (Creswell, 2014), stratification means that the specific characteristics of individuals are represented in the sample and the sample reflects the true proportion in the population of individuals with certain characteristics. In stratified random sampling, units are divided into homogeneous groups such as undergraduate students at different years of study. The focus of the investigation was on the difference between the strata and therefore constant stratification was applied. According to Parahoo (2014) a stratified random sample is drawn by separating the units in the sample frame into strata, based on the variables. The advantage of stratified random sampling was that it provided for the representation of particular segments of the population (Creswell, 2014). The disadvantages are that it required extensive knowledge of the population under study in order to stratify it, thus a complete list of the study population, that is, a sampling frame for each stratum was needed and that could quickly become very complex (Creswell, 2014). Therefore, in this study stratified random sampling was used, where all students approached per year level, and ensured that the students that

partook, were a representative sample in terms of the demographics of the entire undergraduate nursing population at the institution.

The researcher got a sample frame for each year of study which made sampling easier. Grove and Ciper (2017) emphasised that the principal objective of stratification was to reduce random sampling. In this study, the sample was divided into strata or subgroups taking random samples from various strata, that is, a sample of nursing students was divided into subgroups by year of study, from first, second, third and fourth-year. A random sample was taken from each stratum in a number that is proportional to the size of the stratum. The study participants were selected randomly on the basis of their classification into the selected stratum (Grove & Ciper, 2017).

3. 4. 2. Sample size

Sample size is the number of people participating in a study, an important factor in the power of the analysis and in the validity of statistical conclusions in quantitative research (Polit & Beck, 2018). The sample was undergraduate nursing students who were registered in their first to fourth year of training during the 2018 academic year. In probability or representative sampling, each element in the target population has an equal chance of being included in the sample and ensures that the sample will be representative of the population.

There were 280 first-year nursing students attending the lectures and from this number of students the sample size was 69. For the second-years, there were 307 nursing students attending the lecturers and the sample size drawn was 69. For the third-years, there were 224 nursing students attending the lectures and from this the sample size was 63. Finally, the fourth- year nursing students were 207, and from this number of students the sample was 63.

3. 4. 3. Sample size calculation

Using the sampling frame which is a list of all the elements in the population, a sample is drawn (Polit & Beck, 2018). The sampling frame was a complete list of all nursing students the researcher wanted to study. The sampling frame consisted of the first, second, third and fourth-year nursing students with a total of 1018 study population. Using the sample size formula and the Raosoft (2004) formula in which $p=50\%$ response was assumed at a margin of error of 5% at 95% confidence level (i.e. $\alpha=0.05$), a sample size of 264 participants was obtained based on the above assumptions, using the statistical software from a randomly sampled population of 1018 students. In terms of the numbers selected above, the sample size n and margin of error E are given by

$$x = Z(c/100)2r(100-r)$$

$$n = N x / ((N-1)E^2 + x)$$

$$E = \text{Sqrt}[(N - n)x/n(N-1)]$$

Where N is the population size, r is the fraction of responses that you are interested in, and $Z(c/100)$ is the critical value for the confidence level c . (Raosoft, 2004).

The nursing students from the School of Nursing (SoN) that formed part of the study that were considered in terms of strata, were divided into four subgroups of undergraduate nursing students and a sample taken from these. A stratified sample was obtained by taking samples from each stratum or subgroup of the population. The subgroups or strata were comprised of first, second, third and fourth-years. Table 3.1 illustrates the number of students that were expected to be sampled from the School of Nursing from each year of study along with the student population indicating the 264 undergraduate nursing students randomly selected from 1018 undergraduate nursing students.

Table 3.1: Allocation of student samples by SoN size categories with approximate confidence intervals

Educational level	No. of students	Sample size
First year	280	69 (24.64%)
Second year	307	69 (22.48%)
Third year	224	63 (28.13%)
Fourth year	207	63 (30.43%)
Total	1018	264(25.93%)

3.4.4 Inclusion criteria

- Undergraduate bachelor of nursing students from first-year to fourth-year

3.4.5 Exclusion criteria

- Postgraduate students
- Foundation students (extended programme) - studying nursing for five years. Both postgraduate students and foundation students were at the study site but they did not meet the inclusion criteria because they are not in the main stream nursing programme that runs over a period of four academic years, and due to the additional expenses, that would have been incurred and the existing financial constraints.

3.5. Data collection instrument

The HIV and AIDS KAP survey used the quantitative method (predefined questions formatted in a standardized questionnaires) and provided access to quantitative information (IPP). Data was collected using the HIV and AIDS KAP survey instrument which was produced and tested by the International Planned Parenthood Federation (IPPF). This questionnaire had previously been

administered and used, by the IPPF in various countries, for healthcare providers and staff which included nursing students (Frain, 2017).

The instrument measured factors such as: HIV and AIDS risk perception measured by thoughts on the chances of contracting AIDS, none, small, moderate or great, whether participant believed in the voluntary testing and counselling of HIV and AIDS and whether the participant personally knew somebody who had died of AIDS (Kok et al., 2018).

The HIV and AIDS KAP questionnaire for the undergraduate nursing students had four components:

- Socio-demographics
- HIV knowledge - Transmission, prevention and treatment,
- HIV Attitudes - Empathetic and refraining attitudes
- HIV Practices - Clinical exposure (hospitals/clinics protocols/policies) and, preparedness to take care of patients with HIV and AIDS

3.5.1. Pretesting

Pretesting is normally done in a small-scale study, or trial run, done in preparation for a major study, often to assess feasibility (Polit & Beck, 2018). The instrument was tested using 12 participants and the comments were incorporated into the final instrument revisions (Creswell, 2014). This testing was important to establish the face validity of scores on an instrument and to improve questions, format and scales. Overall, pretesting is an important step that can help identify potential problems. A pretest was conducted to estimate how long it would take to complete the questionnaire, and verify whether there were any problems in completing the questionnaire, and ensure that the participants of the study understand the questions (Burns et al., 2011).

The researcher ensured that the instructions and wording of items were not subject to varied interpretations and that the questionnaire was pretested to ascertain clarity.

3. 6. Rigor

Methodological rigor, as applied in quantitative research, was addressed in this study. It refers to the soundness or precision of a study in terms of planning, data collection, analysis, and reporting (Marquart, 2017) and includes reliability and validity.

3.6.1 Reliability and validity

3.6.1.1 Validity

Marquart (2017) takes the view that validity is grounded in the underlying theoretical framework of a measurement, asking what it should measure, and how well it connects to other external variables or criteria that knowingly relate to this theory. Validity also extends to questions regarding the generalizability of findings, for example, in asking whether the results provided by a measurement can be extended to other contexts, subjects, or situations. Marquart further states that in their various forms, validity can often be directly estimated with the help of established parameters and associated interpretation, and they largely affect the assessment of quantitative methodological rigor in general. However, some of the criteria are more relevant in the context of specific methods, and limitations to their adherence vary according to the approach to data collection that scientists apply (Marquart, 2017). According to Burns et al. (2015), to prevent false negative results, it was essential to determine whether the sample size was adequate to detect differences or relationships that actually existed in the undergraduate nursing students for each year of study. For this study two types of validity, namely face validity and content validity, were considered in more detail.

Face Validity: Face validity is the extent to which a test is subjectively viewed as covering the concepts it purports to measure. It refers to the transparency or relevance of a test as it appears to test participants on knowledge, attitudes and practices regarding HIV and AIDS. The instrument was assessed for content validity by the research supervisor, by assessing how it measures all the objectives (Burns et al., 2015). Face validity was ensured by the supervisor and co-supervisor of the research. An extensive literature review of the questionnaire was conducted and was reviewed by the research supervisor and statistician to ensure that all components of the intended study are covered by the instrument.

Table 3.2: Content validity

Objective	Questionnaire section and questions
To determine undergraduate nursing students' knowledge regarding HIV and AIDS	HIV knowledge section: Q13 - Q18, Q29, Q35 - Q 36, Q40-50
To determine undergraduate nursing students' attitudes regarding HIV and AIDS.	HIV attitude section: (Q19-Q28; Q30 -Q31), Q 37, Q 39.
To determine undergraduate nursing students' practices regarding HIV and AIDS	HIV practice section: Q8 - Q12; Q32 - Q34; Q 38

3.6.1.2 Reliability

Assessing reliability includes pretesting and calculating the internal consistency of a scale by computing objective mathematical scores such as Cronbach's alphas (Yang & Green, 2011). The questionnaire was pretested, to determine how long the questionnaire would take to complete, the

researcher pretested the questionnaire using twelve similar participants who were not part of the actual sample of the study. This study sought to find the relationship between the characteristics (variables) of interest such as knowledge, attitude and practices. The questionnaire was clear and straight forward. There was no need to change anything in the 50 questions. The average time taken to complete the questionnaire was 15 minutes.

Internal consistency: Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group, and is considered to be a measure of scale reliability. It is a statistic commonly quoted by authors to demonstrate that tests and scales that have been constructed or adopted for research projects are fit for purpose (Taber, 2017).

Cronbach's alpha can be written as a function of the number of test items and the average inter-correlation among the items (Grove & Ciper, 2017). Cronbach's alpha, also referred to as alpha coefficient and coefficient alpha, and is a measure of the internal consistency of a set of items that comprise a scale. Aside from reporting the coefficient only, it is also important to provide a description of the measures (including means and standard deviations) used to derive the reliabilities. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale.

The questionnaire consisted of fifty questions and was completed by a sample of 264 participants. The researcher was satisfied that the 21 questions were measuring the KAP construct, but wished to know if they were reliably measuring this construct, (i.e. whether the questions used to measure KAP were internally consistent). To measure the internal consistency, the researcher calculated Cronbach's alpha for these 21 items.

The researcher ran some reliability analysis for sections of the questionnaire that were on a Likert scale. The sections that had acceptable alpha values were used. The sections that had poor Cronbach alphas were not included in the analysis. All together they are 21 questions that were accepted out of 55 questions that were on Likert scale, therefore 34 were dropped. The various sections with their Cronbach alpha values ranged between .63 and .74: Knowledge of HIV and AIDS risk and transmission (Q13 [Items: A, B, C, D, & F] = $\alpha=.71$, [Q15 & Q16] = $\alpha=.74$; Knowledge of protocols adopted (Q29 [B, C, D, E, F, G] = $\alpha=.63$; Knowledge of sexual orientation and sexual behaviour [Q35 & Q36] = $\alpha=.65$; [Q43A & 43B] = $\alpha=.65$; Attitude – HIV Risk perception and stigmatization [Q30B & Q30C] = $\alpha=.70$; Practice (i.e., Clinical exposure and preparedness to take care of PLWHA [Q38A & Q38B]) = $\alpha=.71$. The overall Cronbach's Alpha could not be computed because they measured different constructs on different scales.

3. 7 Data collection process

The nursing students' survey was conducted in April 2018, after permission had been granted by the ethics committee of the University of the Western Cape. Information was communicated to the coordinators and lecturers whose class had been selected to take part in the study. Permission was asked from the lecturers to give the researcher some time during their class to distribute the questionnaires at specific dates and times when the lecturer was holding a class. The HIV and AIDS KAP questionnaires was distributed by the researcher to the undergraduate nursing students at the end of their class sessions with the cooperation of the relevant lecturers for time slot and the lecturers left after their class session.

The researcher had a five-minute information session with the students during which the researcher provided participants with all relevant information about the study. Any distractions were minimized,

for example, students were asked to switch off their phones and told that they were not allowed to talk to each other. They were then invited to voluntarily participate in the study. A covering letter explaining the purpose of the study, their right to refuse to participate in the study by leaving the class, and assurance of anonymity was given to all students.

The consent form was included in the front page of the HIV and AIDS KAP survey. The students were requested to give written consent as proof of voluntary participation in the study. After providing consent, students took ten to fifteen minutes to complete the questionnaire. To ensure anonymity, students were instructed to omit personal identification on the questionnaires. All participants were free to ask questions about the study or to withdraw from it. The data was collected at different times and dates from each student group depending on the arrangements with the lecturers in order not to affect their classes. The researcher answered all the questions from the participants during the completion of the questionnaire. The completed questionnaires were collected and put in a safe cupboard under lock and key.

3.8 Data analysis

According to Creswell (2018), descriptive analysis of data includes describing the results through means, standard deviation and range of scores. Statistical tools and methods were applied to analyse data (Ravtch & Riggan, 2012). After the survey data had been collected, data cleaning and was performed by the researcher. The data was coded and entered into an Excel spreadsheet and then imported into the IBM Statistical Package for the Social Sciences (SPSS) version 25. The data was analysed to help achieve the research objectives. In this study a number of data analysis methods for quantitative data were utilized. Specifically, descriptive, including inferential statistics were used to describe and analyse the data.

Descriptive statistics: is the term given to the analysis of data that helps describe, show or summarise data in a meaningful way such that, for example, patterns might emerge from the data. They are simple ways to describe data. In this study descriptive statistics were used to describe data by measure of central tendency, measure of frequency, measure of dispersion and measure of position (Creswell & Creswell, 2018).

Inferential statistics: are frequently used in most research conducted on a group of people to analyse the results and draw conclusions (Creswell & Creswell, 2018). Inferential statistics (parametric) were used to analyse the data. Cross-tabulations (bivariate descriptive) analysis was conducted to determine the relationships between knowledge, attitude, and practice. An independent t-test and one-way ANOVA was performed to compare the student nurses' level of knowledge, attitude and practices in relation to some demographic variables. In all analyses, the p values were used as the criterion for statistical significance, that is, the statistical significance level was accepted as $p < .05$.

3.8.1. Assessing the influence of demographics

Objective 1: Was to determine undergraduate students' level of knowledge regarding HIV and AIDS. Frequencies were used to determine their overall level of knowledge. Their level of knowledge regarding HIV and AIDS covered risk factors for contracting HIV, risk reduction for contracting HIV, HIV transmission, risk reduction for HIV transmission, HIV antiretroviral therapy, discrimination and sexual behaviour, HIV prevention programme, HIV policies and protocols, sexual orientation/behaviour, contraceptive options, and risk perception for healthcare providers. Moreover, their level of knowledge about HIV was ascertained in relation to age, gender, level of study, and healthcare setting. In all 48 items were used.

Objective 2: Was to determine undergraduate students' attitude towards HIV and AIDS issues. Frequencies were used to determine their overall level of attitude regarding the following dimensions: empathetic attitudes, attitudes on policies, protocols and notification, attitudes or perception about PLWHA, attitudes on risk perception, attitudes of participants to meet HIV and AIDS patients, and working with laboratory samples. In all 28 items were used.

Objective 3: Was to determine undergraduate students' practices based on levels of clinical exposure or preparedness towards HIV and AIDS issues. Frequencies were used to determine their overall level of clinical exposure. The following dimensions of clinical exposure were examined: clinical exposure towards PLWHA, and on HIV treatment, organisation offered training or sensitisation sessions about HIV and AIDS, health services provided, preparedness to provide services for PLWHA, level of clinical exposure/preparedness. In all 33 items were used.

Objective 4: Was to determine the effect of undergraduate students' demographics on their knowledge, attitudes, and practices, eighteen items were used for the inferential statistics. Two items were used for attitude, two items were used for practices.

Objective 5: Was to examine the association between undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AID, three different items were used for each of; knowledge, attitude, and practice.

Chi-square (χ^2) is an inferential statistical test calculated to examine the differences among groups with variables measured at the nominal level (Grove & Ciper, 2017). Its properties were first investigated by Karl Pearson in 1900. The Chi-square statistic is commonly used for testing relationships between categorical variables. The null hypothesis of the Chi-square test is that no relationship exists on the categorical variables in the population; they are independent. Cross-

tabulation (Chi-square test) is a powerful technique that helps to describe the relationships between categorical (nominal or ordinal) variables. The following statistics can be produced with cross-tabulation: observed counts and percentages.

Relationship between knowledge and attitude: Chi-square tests were used to determine whether the level of knowledge has a significant relationship between attitude and, possibly, on practice (exposure/preparedness).

Relationship between knowledge and practice (exposure/preparedness): Cross-tabulations with Chi-square tests were used to ascertain whether the type of attitude has a significant effect on the amount of exposure/preparedness and, possibly, on the level of knowledge.

Relationship between exposure/preparedness (practice) and attitude: Cross-tabulations with Chi-square tests were used to investigate whether the amount of exposure/preparedness has a significant relationship on the type of attitude and, possibly, on the level of knowledge.

3.9. Ethical considerations

Ethics is defined as a set of moral principles and values of right conduct, and are concerned with respecting research participants throughout research projects based on ethical criteria (Flick, 2015). According to Polit and Beck (2018), ethics is a system of moral values that are concerned with the degree to which base research procedures adhere to professional, legal and social obligations to study participants. The codes of ethics that was applied in this research were which are based on the three principles of beneficence, respect for human dignity and justice. The researcher complied with the rules and regulations of the university's research and ethics committee to ensure that ethical standards were upheld throughout the study.

3.9.1. Permission

The research proposal was approved by Community and Health Sciences Higher Degrees (CHSHD) and ethical clearance was obtained from the University's Humanities and Social Science Research Ethics Committee. Permission to conduct the study on student participants was obtained from the university registrar, and the director of the School of Nursing.

3.9.2 Informed consent

The researcher provided the participants all relevant information about the study so that they were explicitly prepared. Participants enter into a relationship with the researcher, and it is crucial that this relationship is not exploited (Polit & Beck, 2018). The participants were requested to give written consent as proof of voluntary participation in the study. The principle of respect for human dignity includes the right to self-determination and the right to full self-disclosure (Polit & Beck, 2018). According to Polit and Beck (2018), self-determination means that prospective participants have the right to decide voluntarily whether to participate in a study, without the risk of incurring any penalty or prejudicial treatment. It means that participants have the right to ask questions, to refuse to give information or to terminate their participation at any time and without any consequences. In case of the researcher is in a position of authority, he/she should not give threats to those who do not want to partake in the study. According to Polit and Beck (2018), full self-disclosure means that the researcher has adequately explained the nature of the study, the right to refuse participation, the researcher's responsibilities and the likely risks and benefits that might occur. Polit and Beck (2018) also state that the right to self-determination and self-disclosure are two elements on which informed consent is based.

3.9.3. Anonymity & confidentiality

To ensure anonymity, the participants were told not to write their names on the questionnaires and that their names would not be used in the write-up of the study (Polit & Beck, 2018). *Confidentiality:* Participants were made to understand that all information would be treated with strict confidentiality and the information obtained would only be used for research purposes, and would not be used against them. Questionnaires were assigned codes to keep the responses of participants anonymous. The disclosure of any information that might have caused harm to participants was avoided, and extreme care was taken in reporting on research findings to ensure it did not disclose their identity (Polit & Beck, 2018).

3.9.4. Privacy/principle of Justice

According to Polit and Beck (2018), the principle of justice includes the participants' fair treatment and privacy. Right to fair treatment before, during and after participation in the study. The researcher ensured that the study was not more intrusive than it needed to be and participants' privacy was upheld throughout the study. The data was kept in secured and restricted storage under lock and key. The soft data was password protected. Only the researcher and the research supervisors had access to the soft data. The hard copy and soft data collected from the study would be destroyed by the researcher five years after the conclusion of the study. The students were informed that their names would not be used in the write-up of the research report.

3.9.5. Respect

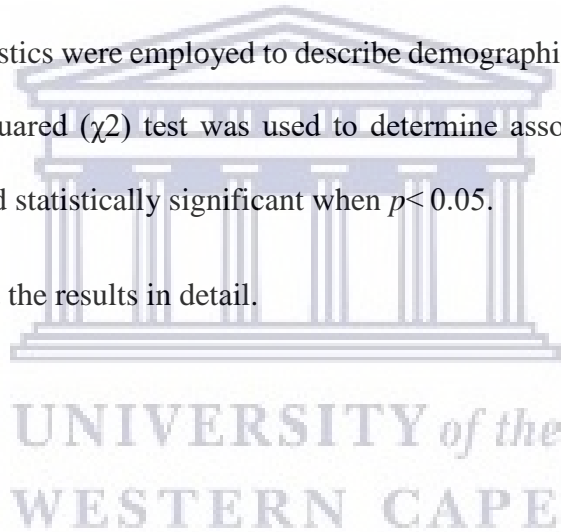
The researcher monitored the participants for signs of distress during data collection, to ensure that none of the participants suffered any psychological harm. However, there were no participants with any sort of emotional or psychological distress that needed to be referred for assistance and support

from mental health. The participants were given information sheets and informed that participation in the study was voluntary and that they had the right to withdraw from the study at any time without consequences (appendix 3 information sheet and 4 consent form).

3.10. Conclusion

In this chapter the design, participants, procedure and materials were described. The research design and methodology of this study was appropriate for the assessment of nursing students' knowledge, attitude and practices regarding HIV and AIDS. The instrument measured students' level of knowledge, empathetic and refraining attitudes and clinical exposure and preparedness to take care of PLWHA. Descriptive statistics were employed to describe demographics, knowledge, attitude and practice variables. A Chi-squared (χ^2) test was used to determine association between variables. Associations were considered statistically significant when $p < 0.05$.

The next chapter will present the results in detail.



CHAPTER 4

Results

4.0. Introduction

A descriptive survey study was carried out among nursing students enrolled in one of the higher educational institutions in the Western Cape, South Africa. The study sought to ascertain the levels of knowledge, attitude including practices (a KAP survey) of undergraduate nursing students towards HIV and AIDS.

The analysis was done and presented based on the following five main objectives:

- To determine undergraduate nursing students' knowledge regarding HIV and AIDS.
- To determine undergraduate nursing students' attitudes regarding HIV and AIDS.
- To determine undergraduate nursing students' practices regarding HIV and AIDS
- To determine the effect of undergraduate students' level of study, and clinical setting on their knowledge, attitudes and practices.
- To examine the association between undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS.

4.1. Sample realization


The sample size of undergraduate nursing students comprised of 264 students from the total study population of 1014 students. All the questionnaires distributed were completed and returned (100% response rate). Seven (7) students younger than 18 years were excluded from this study because parental consent was not obtained. Therefore, the analysis included the data from 257 participants.

4.2. Demographic information of participants

4.2.1 Demographic characteristics of the participants

Table 4.1 shows the demographic characteristics of all the participants. The examination was conducted with 257 undergraduate students ranging from first-years to fourth-years. Predominantly, the sample consisted of female (84.0%, n=217) participants. The largest proportion of the participants fell into the 18 to 26 year age group (80.2%, n=206), with an average age of 27.72 years. The different years of study were in effective equally represented in the sample. The participants were almost equally distributed between clinic and hospital placements.

Table 4.1 Demographic characteristics of the total participants (n=257)



Variable	F (%)
Year Level:	
First year	64 (24.9%)
Second year	67 (26.1%)
Third year	63 (24.5%)
Fourth year	63 (24.5%)
Healthcare-setting:	
Clinic	126 (49.0%)
Hospital	131 (51.0%)
Gender:	
Female	217 (84.4%)
Male	38 (14.8%)
Age:	
18 – 25	206 (80.2%)
26 and over	51 (19.8 %)

4.3 Knowledge of undergraduate nursing students concerning HIV and AIDS

The first objective of this study was to determine undergraduate students' knowledge regarding HIV and AIDS. The questionnaire contained 42 questions about various knowledge dimensions of HIV and AIDS. They were designed to create a knowledge score for HIV and AIDS. The responses to these questions were evaluated as either right or wrong. Thus, by adding up the number of correct questions for each participant, their knowledge could be placed in a knowledge score that ranges from 0 (no correct answers) to 42 (all correct answers). See Table 4.2.

Table 4.2: Distribution of Knowledge questions related HIV and AIDS ($n=257$)

Risk factors (RF) for contracting HIV	Agree n (%)	Disagree n (%)	Unsure n (%)
Unprotected oral sex	*177 (70%)	58 (22.9%)	18 (7.1%)
Bathing with HIV+ person	78 (31.0%)	*144 (57.1%)	30 (11.9%)
Sharing needles	*232 (91%)	19 (9%)	4 (1.6%)
Receiving unscreened blood transfusion	*196 (77.2%)	39 (15.4%)	19 (7.5%)
Mosquito bite	58 (22.8%)	*152 (59%)	44 (17.3%)
Sharing silverware with HIV+ person is	82 (32.8%)	*125 (50.0%)	43 (17.2%)
Risk reduction for contracting HIV			
Abstinence	*210 (82.4%)	40 (15.7%)	5 (2.0%)
Healthy diet	119 (46.9%)	*116 (45.7%)	19 (7.5%)
Using new needle every time	*235 (92.5%)	14 (5.5%)	5 (2.0%)
Using condoms during sex	*232 (91.7%)	18 (7.1%)	3 (1.2%)
MTCT HIV-Transmission during....			
pregnancy	*199 (77%)	34 (13.2)	24 (9.3%)
childbirth	*194 (75%)	23 (8.9%)	40 (15%)
breast-feeding	*214 (83%)	20 (7.8%)	23 (8.9%)
Risk reduction for MTCT HIV			
ARV during pregnancy	*200 (78%)	37 (14%)	18 (7.1%)
baby delivered via caesarean)	*86 (34%)	103 (40%)	63 (25%)
promoting prenatal VCT	*198 (78%)	33 (13.1%)	20 (8.0%)
HIV and AIDS Treatment (Antiretroviral therapy) ARVs			
helps live longer	*203 (80.2%)	37 (14.6%)	13 (5.1%)
frequently has side effects	157 (62.8%)	*45 (18.0%)	481 (9%)
can decrease risk of transmission	*140 (56.2%)	77 (30.9%)	32 (12%)

can cure	41 (16.6%)	*187 (75.7%)	19 (7.7%)
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Discrimination and sexual risk behaviour

HIV+ clients should be separated from clients of unknown HIV status to protect uninfected clients	23 (8.9%)	*214* (83.3%)	20 (7.8%)
Use same bio-safety for all, despite status	211* (85.4%)	25 (10.1%)	11 (4.5%)
A client with HIV can get his/her CD4	*233 (90%)	5 (1.9%)	19 (7.4%)
If someone is infected with certain STIs,	*160 (62.3%)	39 (15.2%)	58 (22%)
Sexual behaviours that make someone	*204 (79.4%)	9 (3.5%)	44 (7.1%)
More sexual partners increases risk	*210 (81.7)	46 (17.9%)	1 (0.4%)
Can tell if HIV+ by looking.	65 (25.3%)	*178 (69.3%)	14 (5.4%)
Could be + despite negative test result	*205 (80.4%)	27 (10.6%)	23 (9.0%)
HIV – Prevention Programme			
Do you think that STI testing for clients	*216 (84.0)	8 (3.1 %)	33 (12%)
should be part of the HIV prevention			

* Correct answer

The key results from Table 4.2 are described below:

Table 4.2 above shows that most of the participants reported correctly that: sharing needles (91.2%, $n=239$), unprotected oral sex (70.0%, $n=177$), receiving unscreened blood transfusion (77.2%, $n=196$), are risk factors. Misconceptions about risk factors for contracting HIV were also correctly identified by the participants. However, a small percentage of participants incorrectly identified the misconception as a risk factor, such as the participants believe that: bathing with HIV+ person (31.0%, $n=78$), mosquito bite (22.8%, $n=58$), and sharing silverware with HIV+ (32.8%, $n=82$) could transmit HIV. On questions related to using new needles, condom use, and abstinence, a number of participants (92.5%, $n=235$) correctly identified that using a new needle every time, using condoms during sex reduces (91.7%, $n=232$), and abstinence (82.4%, $n=210$) reduce risk for contracting HIV. On the other hand, a misconception reported was that healthy diet reduces the risk of contracting HIV. With regard to MTCT (mother-to-child HIV transmission), more than 80% of the participants

correctly reported that MTCT can happen through breastfeeding (83.3%, $n=214$), while more than 75% reported that MTCT can happen during pregnancy (77.4%, $n=199$) and during childbirth (75.5%, $n=194$). A few participants incorrectly reported that HIV cannot be transmitted to child during pregnancy (22.5%, $n=58$), during child birth (24.5%, $n=73$), and more than 15% during breastfeeding (16.7%, $n=43$). In this regard, although the percentage is smaller when compared to those who responded correctly, that there were a number of students that did not know about mother-to-child HIV transmission is of serious concern.

On a similar question about MTCT, most of the participants (78.4%, $n=200$) correctly reported that MTCT can be reduced by taking ARV during pregnancy and (78.9%, $n=198$) reported that MTCT can be reduced by promoting prenatal VCT. Opinions about MTCT being reduced by having a caesarean section (40.9%, $n=103$), is reasonably well distributed among the various responses. Option, with the mode being false, almost 60% (59.1%, $n=149$) participants incorrectly reported that MTCT cannot be reduced if the baby is delivered via caesarean section. In the statement about antiretroviral therapy help to live longer, the participants (80.2%, $n=203$) answered correctly that ARV helps to live longer, while 75.7% ($n=187$) of the participants reported that there is no cure and about 56.2% ($n=140$) of the participants reported that ARV therapy can decrease the risk of HIV transmission. On a related question, most (85.4%, $n=211$) of the participants correctly reported that the same bio-safety measures should be applied regardless of HIV status. A small proportion of participants (8.9%, $n=23$) incorrectly reported HIV positive clients should be separated from clients of unknown HIV status to protect uninfected clients. In terms of sexual partners, the majority (80.4%, $n=205$) of the participants correctly reported that having more sexual partners increases risk (81.7%, $n=210$) and that a person can be HIV positive despite a negative test result. Almost 70% (69.3%, $n=178$) of the participants correctly reported that it is not possible to tell whether someone is infected

with HIV by looking at a person, whereas 30.7% ($n= 79$) of the participants incorrectly responded that it is possible to tell whether someone is infected with HIV by looking at him/her.

Table 4.3 Distribution of knowledge questions related HIV Policies/ Protocols

Distributions for knowledge questions related	should be	should not be	
Policies or protocols in the clinic/ hospital			
Client	*220 (90.2%)	17 (7.0%)	7 (2.9%)
Ministry of Health	90 (36.0%)	*97 (38.8%)	63 (25.2%)
Parents (if youth)	91 (36.4%)	*119 (47.6)	40 (16.0%)
Current partners	78 (31.1%)	*124 (49.4%)	49 (19.5%)
Insurance company	75 (30.4%)	*113 (45.7%)	59 (23.9%)
Past partners	51 (20.6%)	*141 (56.9%)	56 (22.6%)
Employer	37 (14.9%)	*167 (67.3%)	44 (17.7%)

* Correct answer

The stakeholder that participants mostly correctly reported should be notified is the client him/herself (90.2%, $n= 220$) and the one they incorrectly reported should be notified is the employer (14.9%, $n=37$), current (31.1%, $n=78$), and past (20.6%, $n=51$) partners, parents (if a youth) (36.4%, $n=91$), Ministry of Health (36.0%, $n=90$), and insurance company (30.4%, $n=75$) (Table 4.3).

Table 4. 4: Distribution of knowledge related to Sexual Orientation/ Behaviour

As a healthcare provider, I need	Completely agree	Somewhat agree	Somewhat disagree	Completely disagree
<i>to know about</i>				
The sexual orientation of my	*121 (49.2%)	64 (26.0%)	61 (24.8%)	0 (0.0%)
The sexual behaviour of my	96 (39.2%)	*80	69 (28.2%)	0 (0.0%)
client?				

*Correct answer

Almost half (49.2%, $n=121$) of the participants correctly reported that they need to know the sexual orientation of the patient. Almost 40% (39.2%, $n= 96$) of the participants incorrectly reported to need to know about the sexual behaviour of the patient (Table 4.4).

Table 4.5: Distributions for knowledge questions related contraceptive options

If you were counselling HIV positive woman about	F (%)
contraceptive options, which of the following best represents	
use of condoms and an additional method at the same time	*122 (47.8%)
Condoms over all other contraceptive options.	85 (33.3%)
Abstinence over all other contraceptive options	27 (10.6%)
Unsure which option to recommend	17 (6.7%)
Sterilization over all other contraceptive options.	4 (1.6%)

The option selected by the largest proportion of participants correctly reported that use of condoms and an additional method at the same time (47.8%, $n=122$). The option selected by the smallest proportion of participants was being unsure of which option to recommend (6.6%, $n=170$). A small proportion of participants (1.6%, $n=4$) incorrectly reported that they would recommend sterilization (Table 4.5).

Table 4.6 Knowledge questions related to risk perception for Healthcare Provider

How likely is it that a healthcare provider will become infected with HIV by providing care to an HIV positive	F (%)
Very likely	34 (14.2%)
Somewhat likely	87 (33.9%)
Not very likely	79 (30.7%)
Not likely at all	38 (14.8%)
I'm not sure	19 (7.4%)

The largest proportion of participants correctly reported that it is somewhat likely that a healthcare provider can become infected by HIV while providing care (33.9%, $n=87$) followed by not very likely (30.7%, $n=79$). About 14.2% ($n=34$) of the participants incorrectly reported that it is very likely that a healthcare provider will become infected with HIV by providing care to an HIV positive client, followed by it is not at all likely (14.8%, $n=38$) (Table 4.6).

4.3.1 Overall Knowledge score

The mean of correct answers for the 42 item knowledge test was $M= 27.84/42$ (minimum 15, maximum 38). Overall knowledge score of 27.84 ± 0.574 . Classifying the knowledge score into three different categories; those who scored $\leq 50\%$ were classified as “low” in terms of level of knowledge, those who scored $50\% < \text{percentage} \leq 70\%$ were classified as “moderate” in terms of level of knowledge and those who scored above 70% were classified as “high” in terms of level of knowledge. The resulting variable’s distribution is shown in Table 4.7.

More than 50% (50.2%, $n=129$) of the participants had moderate knowledge regarding matters surrounding HIV and AIDS (Figure 4.1), whereas 38.5% ($n=99$) of the participants had high knowledge.

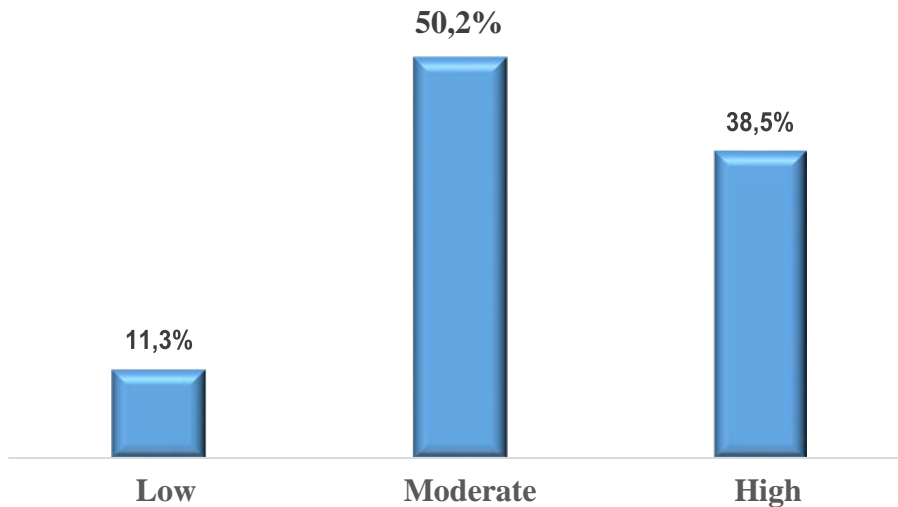


Figure 4.1: Knowledge Categories

4. 4. Attitudes of undergraduate nursing students toward HIV and AIDS

4.4.1 Overall attitude score

The second objective of the study was to determine undergraduate students' attitude towards HIV and AIDS issues. A Likert scale was used to measure attitudes or opinions, participants were asked to rate items on a level of agreement. The questionnaire contained 17 questions (empathetic) and 15 questions (refraining) about various aspects of HIV and AIDS which were designed to test the participants' attitudes about these dimensions. The 17 questions were used to calculate the empathetic (positive) attitude score and 15 questions were used to calculate the refraining (negative) attitude score. The following clusters were identified in the analysis. See Table 4.7.

4.4.1.1 Attitude clusters identified in analysis

The participants were grouped into three different categories based on how the mean score values of each differed from the overall mean score values when calculated for the participants as a single group. Higher values (M=52.34) correspond to stronger positive/negative attitudes towards HIV and

AIDS matters and lower values (M=24.88) indicate weaker positive/negative attitudes towards HIV and AIDS matters.

Table 4.7 Percentage overall score of empathetic and refraining attitude

	Cluster			Overall
	Moderately positive			
Percentage overall score of	30.68	49.28	65.92	52.34
Percentage overall score of refraining attitude	38.85	26.94	16.02	24.88

Figure 4.2 shows that most participants indicated moderately positive empathetic and refraining attitudes.

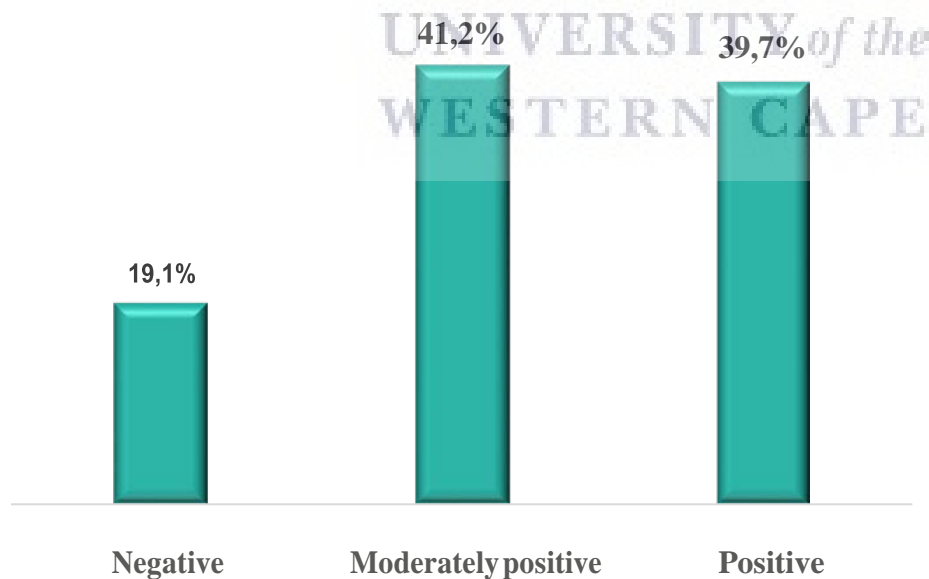


Figure 4.2. Attitude clusters

4.4.2 Attitudes by attitude items

Attitudes on policies and protocols on notification: More than 30% of the participants incorrectly reported that clinics should inform family ($n=85$, 33.1%), and sexual partners ($n=80$, 32.1%) if a person tests positive for HIV. The participant correctly reported that clinics should not report to family ($n=162$, 65.0%) and sexual partners ($n=162$, 67.0%). Only two participants (0.8%) were unsure while 8 (3.1%) had no response on sexual partners to be informed and 10 (3.9%) had no response on family to be informed (Table 4.8).

Table 4.8. Policies or protocols about notification of HIV status in the clinical or hospital setting

Who should be notified	Agreement	Disagreement
Clinic should inform family	85 (33.1%)	162 (63.0%)
Clinic should inform sexual partners	80 (32.1%)	167 (65.0%)

Table 4.9 shows Attitudes on perceptions on PLWHA: presents the agreement on the participants on the items measuring their perceptions about PLWHA

Table 4.9 Levels of agreement on perceptions about PLWHA ($n=251-256$)

Items	Mean (SD)	n
AIDS is God's punishment	3.36 (1.100)	254
Infected because of irresponsible behaviour	2.39 (1.086)	256
If I was HIV + partner would leave me	2.25 (0.973)	251
Would buy food from HIV+ vendor	2.12 (1.177)	256
Would share a bathroom	1.88 (0.973)	256
Would care for in home	1.42 (0.701)	253
Healthy HIV+ should be allowed to teach	1.29 (0.695)	255
HIV+ right to become pregnant	1.27 (0.597)	256

When treating the responses as mean ratings, the mean ratings by the participants on the items on their perceptions about PLWHAs can be seen in Table 4.16. Considering a middle value is 2.5, the mean values above the middle value is an indication that more participants disagreed than agreed and the higher the value the less agreement there was.

It is clear that on average the statement that the participants correctly reported the most was that AIDS is not God's punishment, people not infected because of irresponsible behaviour and if participant was HIV+, partner would leave them. The statements that they also correctly agree with is that HIV positive people should be allowed to teach, they would care for in home, would share a bathroom, would buy food from HIV+ vendor and that HIV positive people have the right to become pregnant (Table 14.9).

Attitudes on risk perception: Almost three quarters of the participants correctly reported, they are most worried about HIV infection (71.6%, $n=184$), followed by having enough training (14.4%, $n=37$), and least worried about others thinking you are infected, none of these worry at all, and lastly if clients were going elsewhere (Table 4.10).

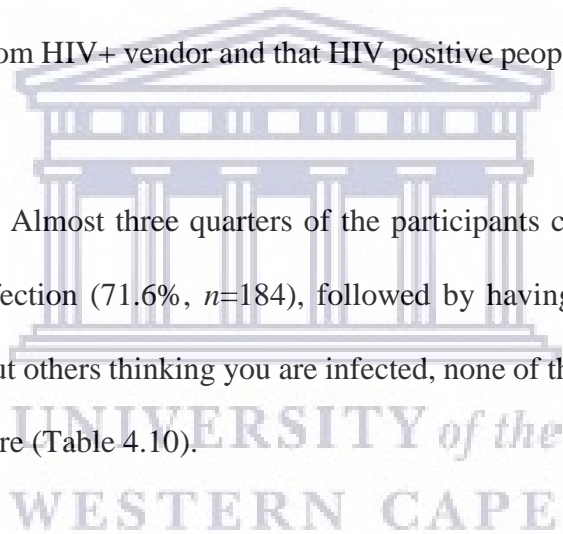


Table 4.10 HIV and AIDS - Risk Perception- (n=249)

Which of the listed issues worry you the most?	F (%)
HIV infection	184 (71.6%)
Having enough training	37 (14.4%)
Others thinking you are infected	13 (5.1%)
None of these	8 (3.1)
Clients going elsewhere	7 (2.7%)

Almost three quarters of the participants worried most about HIV infection (71.6%, $n=184$).

Attitudes on meeting PLWHA: When asked “how nervous are you?” about the next appointment with client who has AIDS, more than half of the participants correctly reported that they were not nervous about having an appointment with a client with AIDS (52.1%, $n=134$). About 34.2% ($n=88$), were very or somewhat nervous. Not applicable responses were 11.3% ($n=29$) and only 6 participants had no response. (Table 4.10).

Table 4.11 Attitudes of participants to meet HIV and AIDS patient (n=251)

If your next patient is HIV positive, how are nervous are you?	F (%)
Not nervous	134 (52.1%)
Somewhat nervous	46 (17.9%)
Very nervous	42 (16.3%)
Not applicable	29 (11.3%)

More than half of the participants were not nervous about an appointment with a client with AIDS (53.4%, $n=134$).

Working with laboratory samples: Participants (35%, $n=82$) correctly reported that they were somewhat comfortable taking laboratory samples from a person living with HIV. Those who incorrectly reported were somewhat uncomfortable (22.6%, $n=53$), with 7.3% ($n=17$) of participants very uncomfortable. (Table 4.11).

Table 4. 12 Taking laboratory samples from a person living with HIV ($n=234$)

How comfortable would you feel taking laboratory samples from a person living with HIV?	F (%)
Very comfortable	82 (35%)
Somewhat comfortable	82 (35%)
Somewhat uncomfortable	53 (22.6%)
Very uncomfortable	17 (7.3%)
Not applicable (I do not take lab samples)	15 (5.8%)

Excluding those for whom the question was not applicable (do not take lab samples) (5.8%, $n=15$), 234 participants were used for this analysis Eighty two (35%) of the remaining 234 participants felt either very comfortable or somewhat comfortable to take laboratory samples from a PLHA (Table 4.12).

4.4.3 Empathetic Attitude Score

The 17 questions about various dimensions of HIV and AIDS were used to create the participants' attitude score for HIV and AIDS. The responses to these questions could be evaluated as indicating a "good" attitude. Thus, by summing up the weights with the focus on letting higher values correspond to "good values", the score of empathetic attitude was 15.18 ± 0.263 .

Highlight the empathetic attitude score by year level

The ANOVA test indicated that year of study had a significant effect on where the participants fall on the empathetic attitude score ($F(3)= 4.775, p<.01$) (Table 4.13).

Table 4. 13 Empathetic attitude score

	N	Mean	Std. Deviation
First year	64	13.78	4.417
Second year	67	15.40	3.989
Third year	63	15.02	4.078
Fourth year	63	16.52	4.016
Total	257	15.18	4.218

The gender, age group and the healthcare setting groups were compared by testing whether the difference between the mean score scores for males and females, between 18 to 25 year olds and those that were 26 or older, for clinic setting and hospital setting are significantly different from zero.

The independent samples t-test found that gender, age and healthcare setting did not have a significant effect on where the participants fell on the empathetic attitude score.

4.4.2 Refraining attitude score

The second objective of the study was to determine undergraduate students' attitude towards HIV and AIDS issues. The questions (15 questions) in the questionnaire that were used to determine their attitudes, could be evaluated as indicating a "fearful" attitude. In analysing the cluster of positive and negative participants, most of the participants ($n=106, 41.2%$) were grouped in the moderately positive category, followed by the ($n=102, 39.7%$) positive participants (Table 4.14).

Table 4. 14 Type of attitude towards HIV and AIDS matters

Level of attitude	F (%)
Negative	49 (19.1%)
Moderately Positive	106 (41.2%)
Positive	102 (39.7%)

The gender, age and healthcare setting groups were compared by testing whether there was a difference between the mean scores for males and females, between 18 to 25 year olds and those that were 26 or older, and education level had no significant effect on where the participants fell on the refraining attitude score. The only significant difference was found between the mean score for clinic setting and hospital setting which is significantly different from zero.

The participants were grouped into three different categories based on how the mean score values of each differed from the overall mean score values when calculated for the participants as a single group. Higher values correspond to stronger positive/negative attitudes towards HIV and AIDS matters and lower values indicate weaker positive/negative attitudes towards HIV and AIDS matters (Figure 4.3).

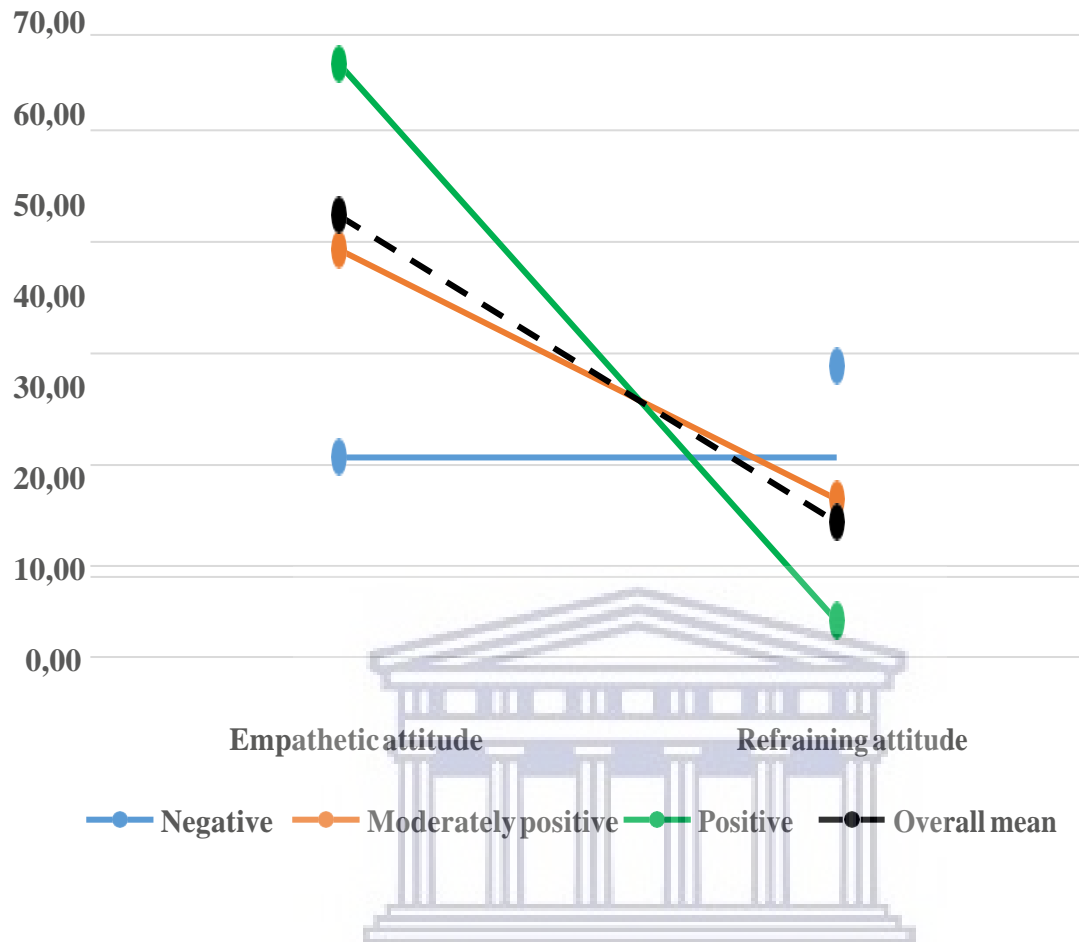


Figure 4.3 Cluster analysis

4. 5 Practices of undergraduate students related to HIV and AIDS

The third objective of the study was to determine undergraduate nursing students' practices, that is, their level of clinical exposure/preparedness regarding service delivery to HIV and AIDS. The 12 questions in the questionnaire that was used to determine their clinical exposure/preparedness, was evaluated as indicating clinical exposure or preparedness. The questionnaire contained 12 questions about various dimensions of HIV and AIDS and they were designed to test the participants' practices about these dimensions.

4.5.1. Practice by Practice items

Clinical exposure: Most participants correctly reported that they had met someone living with HIV (94.9%, $n=243$). Only participants 5.1% ($n=14$) had never met a PLWHA. Most of the participants had heard about ARV (85.5%, $n=219$) and 14.5% ($n=38$) had never heard about ARVs (Table 4.15).

Table 4.15 Clinical exposure towards PLWHA and on HIV- Treatment ($n=257$)

Amount of clinical exposure	Agree	Disagree
Knows PLWHA	243 (94.9%)	14 (5.1%)
Have you heard of ARV?	219 (85.5%)	38 (14.5%)

Sensitization sessions: In terms of training, more than 80% (84.1%, $n=222$) would be interested in attending training if it was offered. Only 1.1% ($n=3$) of the rest of the participants would not be interested in attending training. The rest (14.8%, $n=39$) indicated that they may attend such training. Almost three quarters (73.8%, $n=189$) of the participants had not attended VCT training in the last six months and 26.1% ($n=67$) had attended. Only 189 (2.3%, $n=6$) participants had attended and 24.9% ($n=64$) never responded (Table 4.16).

Participants (84.0%, $n=216$) who selected yes, indicated who had provided the training, which was at their place of clinical placement, and others indicated that an educational institution had provided the training while one participant indicated that they received training from a treatment action campaign (Table 4.16).

Table 4.16. Organization offered trainings or sensitization sessions about HIV and AIDS (n=257)

Training/sensitization session offered	n% (proportion)
Yes	216 (84.0%)
No	3 (1.2%)
Maybe	38 (14.8%)

Question regarding health service provision by the students, most (90.2%, $n=231$) of the participants provide services to patients and 9.7% ($n=25$) provide no services. More than two thirds (66.1%, $n=170$) provide healthcare services to patients, counselling services (7.8%, $n=20$) and education service (22.2%, $n=57$) to patients. The majority of participants (66.1%, $n=170$) reported that they frequently provide medical/nursing healthcare services, followed by education (22.2%, $n=57$) (Table 4.17).

Table 4. 17 Which one of the following services do you most frequently provide?

Services frequently provided	F (%)
Other	2 (0.8%)
Medical/nursing (healthcare)	170 (66.1%)
Counselling	20 (7.8%)
Education	57 (22.2%)
None	5 (1.9%)
Prevention services	1 (0.4%)

Table 4.18 shows that on preparedness to provide services, participants reported that they were prepared (52.1%, $n= 134$) to interact with HIV positive clients to provide services and participants

(39.7%, $n=102$) reported that they were not prepared to interact with HIV positive clients to provide services.

Table 4.18 Preparedness to provide services for PLWHA - level of preparation to provide services ($n=257$)

How prepared to provide services?	F (%)
Very prepared	134 (52.1%)
Somewhat prepared	102 (39.7%)
Unprepared	20 (7.8%)

Almost two thirds (64.8%, $n=164$) of the participants reported that they were very prepared to refer an HIV+ patient elsewhere for services they could not provide. Overall, the proportions of participants reported that they were not prepared at all for any of the three listed practices, was less than 15% as shown in (Table 4.19).

Table 4.19 Preparedness to take for PLWHA ($n=254$)

If a patient has an HIV+ result, how prepared do you feel to ...	Very prepared	Somewhat prepared	Not at all prepared
refer him/her elsewhere for services you cannot provide	164 (64%)	65 (25.7%)	24 (9.5%)
provide him/her with appropriate health services	108 (42%)	116 (45%)	30 (11.8%)
counsel him/her appropriately	102 (40%)	114 (45%)	37 (14.6%)

4.5.1 Practice (Clinical Exposure and Preparedness) Score

The level of preparedness for taking care for PLWHA and exposure to HIV and AIDS is shown in Table 4.20 and Figure 4.3.

Table 4.20 Level of (practice) clinical exposure/preparedness (n=257)

Amount of Clinical exposure/ Preparedness	F (%)
Limited Amount	72 (28.0%)
Fair amount	94 (36.6%)
Comprehensive amount	91 (35.4%)

The largest proportion of participants fell in the fair amount group (36.6%, n=94), followed by the participants that fell in the comprehensive amount group (35.4%, n=91) (Figure 4.3), followed by the participants that fell in the limited amount (28.0 %, n= 72) (Table 4. 20) and (Figure 4.3).

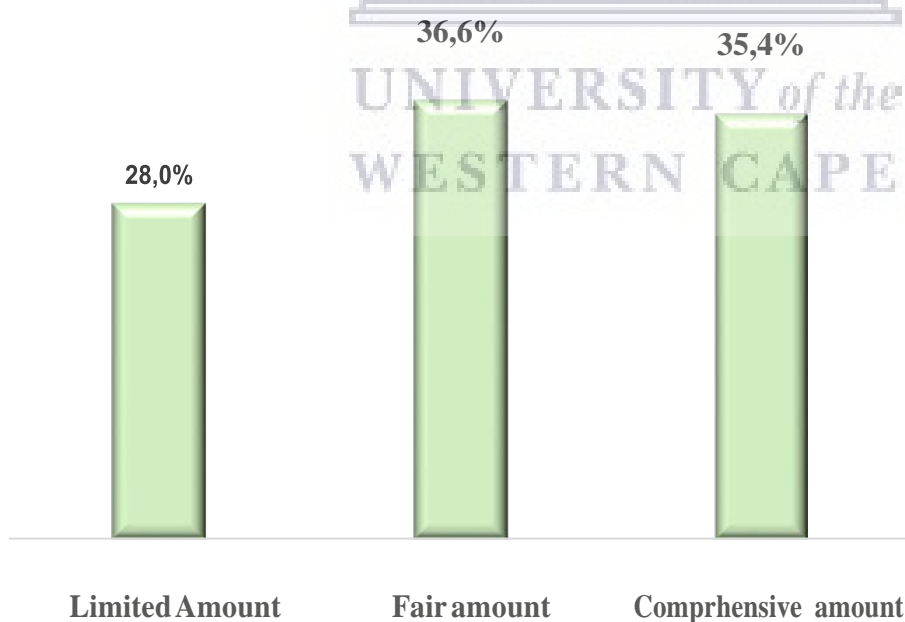


Figure 4.4 Cluster of clinical exposure/ preparedness (practice)

4.5.2 Influence of demographics on practice (clinical exposure and preparedness)

The clinical exposure score measure's distribution was tested for deviation from normality as well as for homogeneity of variance to motivate the use of parametric statistics to investigate group differences based on healthcare setting, gender, age and education level. There were no significant influences on the score by any demographics.

4.6 Effect of nursing students' educational level and healthcare setting on their knowledge, attitudes, and practices

4.6.1 HIV knowledge

4.6.1.1 The effect of education year on knowledge score

Table 4.21 Means and standard deviation of knowledge of risk and transmission of HIV/AIDS as a function of education level among undergraduate nursing students

Variable	N	Mean	SD	First-year	Second-year	Third-year	Fourth-year
First-year	60	11.93	2.76	-	.20	-1.40*	-.41
Second-year	66	11.72	2.91	-	-	-1.60*	-.61
Third-year	60	13.33	1.81	-	-	-	.98*
Fourth-year	61	12.34	2.93	-	-	-	-
Total	247	12.31	71				

Table 4.22: One-Way Analysis of Variance of knowledge of risk and transmission of HIV by education level

	Sum of Squares	df	Mean Square	F	P
Between groups	93.80	3	31.26	4.43	.005
Within groups	1713.92	243	7.05		
Total	1807.73	246			

* $P < .05$

There was a significant effect of education level on the level of knowledge of risk and transmission of HIV and AIDS, $F(3, 243) = 4.43, p = .005$ (Table 4.21). Post hoc analysis using LSD (Table 4.22) showed that the mean score of knowledge of risk and transmission of HIV and AIDS was lower for those in their first-year ($M=11.93, SD=2.76$) than those in third-year students ($M=13.33, SD=1.81$). The mean score of knowledge of risk and transmission of HIV and AIDS was lower for second-year students ($M=11.72, SD=2.91$) than those in third-year ($M=13.33, SD=1.81$).

Moreover, the mean score of knowledge of risk and transmission of HIV and AIDS was higher for third-year students ($M=13.33, SD=1.81$) than for fourth-year students ($M=12.34, SD=2.93$).

Table 4.23 Means and standard deviation of knowledge of risk transmission of HIV and AIDS as a function of education level among undergraduate nursing students

Variable	N	Mean	SD	First year	Second year	Third year	Fourth year
First year	64	4.95	1.43	-	.35	-.74*	-.14
Second	67	4.59	1.78	-	-	1.10*	-.49*
Third year	63	5.69	.94	-	-	-	.60*
Fourth year	63	5.09	1.32	-	-	-	-
Total	257	5.07	1.45				

Table 4. 24 One-Way Analysis of Variance of knowledge of risk transmission of HIV by education level

	Sum of Squares	df	Mean Square	F	P
Between groups	40.76	3	13.58	6.82	.000*
Within groups	503.67	253	1.99		
Total	544.44	256			

* $P < .05$

Table 4.23 shows that education level had a significant effect on the level of knowledge of risk transmission of HIV and AIDS, $F(3, 253) = 6.82, p < .05$. Post hoc analysis using LSD (Table 4.24) showed that the mean score of knowledge of risk transmission of HIV and AIDS was lower for those in first-year ($M=4.95, SD=1.43$) than third-year ($M=5.69, SD=.94$). The mean score of knowledge of risk transmission of HIV and AIDS was lower for second-year students ($M= 4.59, SD=1.78$) than those in third-year ($M= 5.69, SD=.94$). Moreover, the mean score of knowledge of risk transmission of HIV and AIDS was higher for third-year students ($M= 5.69, SD=.94$) than fourth-year student ($M= 5.09, SD=1.32$).

Table 4.25 Means and standard deviation of knowledge of protocol adopted as a function of education level among undergraduate nursing students

Variable	N	Mean	SD	First-year	Second-year	Third-year	Fourth-year
First-year	58	12.75	3.07	-	-.30	-1.57*	-.67
Second-year	62	13.06	3.01	-	-	-1.26*	-.37
Third-year	60	14.33	2.85	-	-	-	.89
Fourth-year	62	13.43	2.88	-	-	-	-
Total	257	13.40	2.99				

Table 4.26 One-Way Analysis of Variance of protocol adopted by education level

	Sum of Squares	df	Mean Square	F	P
Between groups	83.182	3	27.72	3.17	.025*
Within groups	2080.93	238	8.74		
Total	2164.12	241			

* $P < .05$

Education level had a significant effect of on the level of knowledge of protocol adopted, $F(3, 238)=3.17, p=.025$ (Table 4.25). Post hoc analysis using LSD (Table 4.26) showed that the mean score of protocol adopted was lower for those in first-year ($M=12.75, SD=3.07$) than for third-year students ($M=14.33, SD=3.07$). The mean score of knowledge of protocol adopted was lower for second-year students ($M=11.72, SD=2.91$) than for third-year students ($M=14.33, SD=3.07$).

Table 4.27 Means and standard deviation of knowledge of sexual orientation and sexual behaviour as a function of education level among undergraduate nursing students

Variable	N	Mean	SD
First-year	62	4.58	1.33
Second-year	67	4.04	1.50
Third-year	53	4.45	1.30
Fourth-year	63	4.38	1.44
Total	245	4.35	1.41

Table 4.28 One-Way Analysis of Variance of knowledge of sexual orientation and sexual behaviour by education level

	Sum of Squares	df	Mean Square	<i>F</i>	<i>P</i>
Between groups	10.15	3	3.38	1.71	.165
Within groups	475.95	241	1.97		
Total	486.10	244			

There was no significant effect of education level on level of knowledge of sexual orientation and sexual behaviour, $F(3, 241)=1.71, p>.05$ (Table 4.28).

Table 4.29 Means and standard deviation of knowledge of antiretroviral therapy as a function of education level among undergraduate nursing students

Variable	N	Mean	SD	First-year	Second-year	Third-year	Fourth-year
First-year	60	5.55	.87	-	.938*	-.13	.33
Second-year	67	4.61	1.64	-	-	-1.07*	-.60*
Third-year	60	5.68	.72	-	-	-	.46*
Fourth -year	60	5.21	1.31	-	-	-	-
Total	247	5.24	1.27				

Table 4.30 ANOVA One-Way Analysis of Variance of knowledge of antiretroviral therapy by education level

	Sum of Squares	df	Mean Square	F	P
Between groups	44.00	3	14.66	10.01	.000*
Within groups	355.92	243	1.46		
Total	399.93	246			

* $P < .05$

There was a significant effect of education level on level of knowledge of antiretroviral therapy, $F(3, 243) = 10.01, p < .05$ (Table 4.29) Post hoc analysis using LSD (Table 4.30) showed that the mean score of knowledge of antiretroviral therapy was lower for those in first year ($M = 5.55, SD = 1.64$) than those in third year student ($M = 5.68, SD = .72$). The mean score of knowledge of antiretroviral therapy was lower for second year students ($M = 4.61, SD = 1.64$) than those in third year ($M = 5.68, SD = .72$). Moreover, the Mean score of knowledge of antiretroviral therapy was higher for third year students ($M = 5.68, SD = .72$) than fourth year student ($M = 5.21, SD = 1.31$).

4.6.1.2 Effect of healthcare setting areas on knowledge

Table 4.31 Independent samples t-test comparing clinic and hospital healthcare settings on their knowledge of risk and transmission of HIV and AIDS

Variable	N	Mean	SD	df	t	P
Clinic	121	12.6	2.46	245	2.04	.021
Hospital	126	11.9	2.89			

* $P < .05$

Results show that those in clinical settings (M=12.6, SD=2.46) had more knowledge of the risk and transmission of HIV than those in hospital settings (M=11.9, SD=2.89), $t(245)=2.04$, $p=.021$ (Table 4.32).

Table 4.32 Independent samples t-test comparing clinic and hospital healthcare settings on their knowledge of risk transmission

Variable	N	Mean	SD	df	t	P
Clinic	126	5.35	1.31	255	3.06	.001
Hospital	131	4.80	1.53			

Results show that those in clinical settings (M=5.35, SD=1.31) had more knowledge of the risk transmission of HIV than those in hospital settings (M=4.80, SD=1.53), $t(255)=3.06$, $p < .05$ (Table 4.32).

Table 4. 33 Independent samples t-test comparing clinic and hospital healthcare settings on their knowledge of protocol adopted

Variable	N	Mean	SD	df	t	P
Clinic	118	13.7	2.98	240	1.88	.030
Hospital	124	13.0	2.97			

Results show that there was significant difference between clinics (M=13.7, SD=2.98) and hospitals (M=13.0, SD=2.97) in knowledge of adopted protocol $t(240)= 1.88$, $p < .05$ (Table 4.33).

Table 4.34 Independent samples t-test comparing clinic and hospital healthcare settings on their knowledge of sexual orientation and sexual behaviour

Variable	N	Mean	SD	df	t	P
Clinic	114	4.47	1.38	243	1.22	.110
Hospital	131	4.25	1.42			

Results show that there was no significant difference between clinics (M=4.47, SD=1.38) and hospitals (M= 4.25, SD=1.42) in knowledge of sexual orientation and behaviour $t(243)= .110$, $p>.05$ (Table 4. 34).

Table 4.35 Independent samples t-test comparing clinic and hospital healthcare settings on their knowledge of antiretroviral therapy

Variable	N	Mean	SD	df	t	P
Clinic	121	5.37	1.19	245	1.51	.066
Hospital	126	5.12	1.33			

Results show that there was no significant difference between clinic (M=5.37, SD=1.19) and hospital (M=5.12, SD=1.33) on their knowledge of antiretroviral therapy, $t(245)= 1.51$, $p>.05$ (Table 4. 34).

4. 6. 2 HIV attitude

4. 6. 2.1 The effect of education year level on attitude

Table 4.36 Means and standard deviation of attitude as a function of education level among undergraduate nursing students

Variable	N	Mean	SD	First-year	Second-	Third-	Fourth-
First-year	62	4.45	2.04	-	.36	.45	.97*
Second-	66	4.06	1.98	-	-	.90	.61
Third-	63	4.00	2.00	-	-	-	.52
Fourth-	61	3.47	1.81	-	-	-	-
Total	252	4.0	1.98				

Table 4.37 One-Way Analysis of Variance of attitude by education level

	Sum of Squares	df	Mean Square	F	P
Between groups	29.962	3	9.987	2.58	.054
Within groups	958.022	248	3.863		
Total	987.984	251			

The year of education had a significant effect on attitude, $F(3, 248) = 2.58, p = .054$ (Table 4.35). Post hoc analysis using LSD showed that the mean score on attitude was higher for those in first-year ($M = 4.45, SD = 2.04$) than fourth-year ($M = 3.47, SD = 1.81$) (Table 4.37).

4.6.2.2 The effect of Healthcare Setting on attitude

Table 4.38 Independent samples t-test comparing clinic and hospital healthcare setting on their attitude of HIV Risk Perception

Variable	N	Mean	SD	df	t	P
Clinic	125	4.09	2.02	250	.69	.243
Hospital	127	3.92	1.96			

Results show that there was no significant difference between clinic ($M = 4.09, SD = 2.02$) hospital ($M = 3.92, SD = 1.96$) on their attitude of HIV Risk Perception $t(250) = .69, p > .05$ (Table 4.38).

4.6.3 HIV practice

4.6.3.1 The effect of education year level on practice

Table 4.39 Means and standard deviation of clinical exposure and Preparedness to take care of PLWHA as a function of education level among undergraduate nursing students

Variable	N	Mean	SD
First-year	64	4.68	1.19
Second-year	67	4.43	1.25
Third-year	60	4.70	1.15
Fourth-year	62	4.43	1.20
Total	253	4.56	1.20

Table 4.40: One-Way Analysis of Variance of clinical exposure and Preparedness to take care of PLWHA by education level

	Sum of Squares	df	Mean Square	F	P
Between groups	4.261	3	1.420	.977	.404
Within groups	362.040	249	1.454		
Total	366.300	252			

The year of education had no significant effect on clinical exposure and preparedness to take care of PLWHA, $F(3, 249)=.977, p=.404$ (Table 4.40).

4.6.3.2 The effect of Healthcare setting on practice

Table 4.41: Independent samples t-test comparing healthcare setting on their clinical exposure and Preparedness to take care of PLWHA

Variable	N	Mean	SD	df	t	P
Clinic	123	4.59	1.22	251	.143	.34
Hospital	130	4.53	1.19			

Results show that there was no significant difference between clinics (M=4.59, SD=1.22) and hospitals (M=4.53, SD=1.195) on their clinical exposure and preparedness to take care of PLWHA $t(251)=.143, p>.05$ (Table 4.41).

4.7 Associations between knowledge, Attitudes and Practice

Table 4.42 Distribution of attitude, and clinical practice by knowledge of HIV and AIDS

	Level of knowledge			<i>p</i>	
	Low (%)	Moderate (%)	High		
3 group type of attitude				.012*	
towards HIV and AIDS matters					
	Negative	20.7	21.7	15.2	
	Moderately	48.3	46.5	32.3	
	Positive	31.0	31.8	52.5	
Level of clinical					
exposure/preparedness(practice)	Limited amount	31.0	31.8	22.2	.194
	Fair amount	34.5	31.8	43.4	
	Comprehensive	34.5	36.4	34.3	

* $P<.05$

The association between attitude and knowledge was significant, $X^2(4, 257) = 11.12, p=.012$ (Table 4.42). The association between practice and knowledge was not significant, $X^2(4, 257)=4.13, p>.05$ (Table 4.42) Table 4.43 below represent the association between attitude and practice.

Table 4. 43 Distribution of attitude by clinical exposure/preparedness

	Level of clinical			<i>p</i> - value
	Limited amount	Fair amount	Comprehensive amount	
3 group type of attitude towards HIV and AIDS				.310
Negative	18.1	22.3	16.5	
Moderately	47.2	38.3	39.6	
Positive	34.7	39.4	44.0	

The relationship between attitude and practice was not significant, $X^2(4, 257)=2.63, p>.05$ (Table 4. 43).

4.8 Conclusion

In this chapter the results revealed that the level of knowledge among nursing students regarding HIV and AIDS was moderate, attitude was mostly grouped in the moderately positive category and practices fell in the fair category. Descriptive statistics were used for elaborating nursing students' demographic characteristics and mean scores for knowledge, attitude and practice.

Inferential statistics (i.e., one-way ANOVA, independent t-tests, and Chi-square) with statistical significance at $p < 0.05$ was used to establish the association between study variables and the effect of demographics (educational level and healthcare setting) on knowledge, attitude and practices of nursing students on. Correlations between knowledge-attitude, knowledge-practice and attitude-practice were also observed from the study results.

The next chapter will discuss the results in details, showing how they relate to the literature review and research questions, and will argue in support of the overall conclusion.

CHAPTER 5

Discussion of the findings

5.0 Introduction

This chapter discusses the findings of the study as presented in the previous chapter. A descriptive survey study was conducted with the aim of examining knowledge, attitude and practices of undergraduate nursing students towards HIV and AIDS at a higher education institution. The specific objectives were:

To determine undergraduate nursing students' knowledge towards HIV and AIDS. To determine undergraduate nursing students' attitudes towards HIV and AIDS. To determine undergraduate nursing students' practices towards HIV and AIDS

To determine the effect of undergraduate students' demographics on their knowledge, attitudes, and practices

To examine the association between undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS

5.1 Knowledge of nursing students towards HIV and AIDS

The results of the study indicated that among the nursing students, more than half had moderate knowledge; those who scored 50% ≤70% were classified as “moderate” in terms of their level of knowledge regarding matters surrounding HIV and AIDS. Similarly, previous studies (Iwo et al., 2017; Serwaa, 2018) among nursing students in various developing and developed countries reported the level of knowledge regarding matters about HIV and AIDS as moderate. The findings in this study show that more than 90% (91.0%, $n=232$) of the nursing students correctly reported that sharing needles, and razor blades (88.2%, $n=225$) and receiving unscreened blood (77.2%, $n=196$) are risk

factors, thus demonstrating good knowledge. However, nursing students still showed some lack of knowledge around HIV transmission, for example, they reported that mosquito bites (22.8%, $n=58$), sharing silverware with HIV positive persons (32.8%, $n=82$) or bathing with someone who is HIV positive (31.0%, $n=78$) can transmit the virus. According to Akansel et al. (2012) students had adequate or good knowledge relating to the causes of HIV and AIDS. In contrast, Akin et al. (2013) reported that nursing students' knowledge seem insufficient or poor. A further indication of the gaps in knowledge is that no one in the current study answered all of the 42 questions statements used for knowledge score of HIV and AIDS correctly. For example, in this study none of the participants had more than 31 out of 42 answers correct.

More than 20% of the participants did not know that mother-to-child HIV transmission is a serious concern (Table 4.2). This kind of knowledge gap was also reported by various studies conducted to assess the level of knowledge regarding the transmission and prevention of HIV. For this study, in reviewing the literature, the majority of authors concluded that nursing students lack knowledge on the transmission of HIV. Thus perpetuating the fear of contracting HIV because students think they can get HIV from sharing a toilet seat to sharing silverware (Akin et al., 2013; Iwo et al., 2017; Kok et al., 2018; Serwaa, 2018).

In addition, almost 85% (84.4%, $n=216$) of the participants reported that testing patients for STDs should be part of the HIV prevention programme. It is certain that students recognized voluntary counselling and testing of HIV as important elements of any effective prevention, detection, care, and management programmes across many societies as part of their primary healthcare package. The above statement is supported by a study conducted by Chimoyi et al. (2015), in Johannesburg, South Africa, in which they identified that gender specific health education and HIV intervention programmes are needed for improved access to HIV counselling and testing (HCT) services.

Most of the participants had heard about ARV therapy (84.8%, $n=224$), in the statement about antiretroviral therapy the majority (80.2%, $n= 203$) of nursing students reported that ARV helps HIV positive people to live longer. However, the findings in this study show that there are gaps in knowledge related to ARVs as (24, 3%, $n=60$) reported that ARVs can cure HIV. This lack of knowledge can contribute to the risk of not taking adequate universal precautions and poor practice in healthcare settings. According to WHO (2014) all healthcare workers including nursing students need to follow guidelines on the use of antiretroviral drugs for treating and preventing HIV infection.

The study found that knowledge score increases according to year of study, third and fourth-year students had higher levels of knowledge compared to first and second-year students. However, fourth-year students scored lower on HIV knowledge than third-years and the second-years scored lower than first-years. The reasons for this can be attributed to sample variation or third-year and first- year nursing students could have been taught by someone who conveyed the HIV knowledge in a more effective way than the person who taught the fourth and second-year nursing students, considering that these nursing students' study at the same institution. Additionally, this statement was supported by inferential statistics that showed that the third-years had a higher level of knowledge than the first, second and fourth-years (Tables 4.21, 4.23, 4.25 and 4.29). A reason for this could be that the third-years are based in community clinics and consequently are well informed about HIV and AIDS. Therefore this study supports the SANC move of phasing out R425 and introducing R127 which is community based from first-year. In contrast, in Turkey Kok et al. (2018) in their study showed that knowledge regarding HIV matters increases through first to fourth-year.

The first-years' knowledge score was better than second-years (Table 4.27). The reason for this might be that in their high schools they were better taught about the transmission of HIV via sex. This current study was supported by the study conducted in Sowdambigai, Nagar by Indradevi et al. (2014)

in which the first-year nursing students did exceptionally well; their overall knowledge about AIDS was found to be 100%.

On the other hand, previous studies indicate that there is a need to improve the level of knowledge among nursing students toward HIV and AIDS as they are key role players in prevention, care and treatment in their future career as professional nurses (Akin et al., 2016; Kok et al., 2018; Serwaa, 2018; Iwo et al., 2017).

It is noted in the study that a high level of knowledge regarding HIV transmission increased the likelihood of acceptance towards HIV infected clients. In India (Eriksson & Grundin, 2010), reported that high levels of knowledge can also alleviate fear of contagion so that nursing can have high levels of empathetic attitudes and low levels of refraining attitude.

It was essential to examine the knowledge of nursing students so that their course can be restructured according to the gaps in their knowledge because eventually they would be responsible for patient care for PLWHA (Iwo et al., 2017).

Knowledge is one of the core components in the theory of planned behaviour guiding this study. In TPB, attitudes are central to the theory that influence the belief in the ability to successfully bring behavioural changes towards HIV and AIDS. The application of TPB in this study provides explanation on how HIV knowledge affects undergraduate nursing students' attitude towards PLWHA and practices related to HIV. It is predicted that knowledge can change attitude, however, external factors like age, religion, gender, fear, and many more should also be taken into consideration. TPB stipulates that intention, attitude, subjective norm and perceived behavioural control influence behaviour.

Nursing students have used the information that they gained about HIV and AIDS during lectures and in clinical settings because this study shows that they had good knowledge of the prevention of HIV as stated in (Table 4.2), more than 80% of participants (81.7%, $n=210$) correctly reported that more sexual partners increases the risk of HIV infection. In this study nursing students' intention is reflected in their willingness to care for PLWHA. However, they have a fear of contagion which might have an influence on their behaviour and thus they find it difficult to take care of HIV patients (Ajzen, 2006).

5.2 Attitude of nursing students towards HIV and AIDS

The results of this study indicated that the participants (41%, $n=106$) were mostly grouped into the moderately positive category. Similar, Dharmalingam et al. (2015) revealed that undergraduate nursing students had an overall attitude score of 51.26 ± 6.2 and moderately favourable attitudes (67.4%) toward HIV and AIDS patients. This study found that insufficient knowledge may lead to high levels of refraining attitudes while an increased level of knowledge may lead to high levels of empathetic attitudes. Similarly Erriksson and Grundin (2010) in their study found that nursing students had high levels of refraining and empathetic attitudes. In this study, although the level of refraining attitudes were high among nursing students, they were prepared and willing to take care of PLWHA which is supported by Inderevi et al. (2014).

In this research study, nursing students were sensitive and showed respect for their patient's dignity. This was shown in the statement (Table 4 39) that more than 90% (93.4%, $n=238$) of the participants mostly agreed that healthy HIV positive people should be allowed to teach while the what they (79.6%, $n=202$) least agreed with was "AIDS is God's punishment". Similar research carried out in Greece by Stavropoulou et al. (2011) revealed that regarding risk perception the majority of nursing students (90%) rated first on the probability of infection with the virus. Students pointed out

additional aspects regarding risks in caring for HIV people, such as caring for aggressive patients (75%) and implementing nursing care. In Stavropoulou et al. (2011) about 60% of participants reported confident in caring for people with HIV. However, about 40% of them were afraid of providing care to people living with HIV and AIDS. The fear of contagion among nursing students still exists.

In this study almost 74% (73.9%, $n=184$) of nursing students worry about HIV infection and the majority of authors surveyed reported that one of the biggest fears of nursing students is that they will contract HIV in their workplace (Frain, 2017; Kok et al., 2018). Other scholars suggested that enough training can alleviate nursing students' fears (Akansel et al., 2012; Leyva-Moral et al., 2017). In contrast, more than half (53.4%, $n=134$) of the participants in this study reported that they were not nervous about making an appointment with a client with AIDS (Table 4.11) and seventy percent (70%, $n=164$) of the participants were comfortable to take laboratory samples from a PLWHA (Table 4.12). In addition even though the level of refraining attitudes was high among nursing students, nursing students were willing and prepared to take care of PLWHA (Inderevi et al., 2014; Kok et al., 2018).

Akin et al. (2016) and Frain (2017) believe that nursing students' attitudes towards PLWHA need to be improved because "how are they going to take care of PLWHA if they are worried about getting infected with HIV?" In Turkey, a study identified that nursing students had negative attitudes towards PLWHA (Kok et al., 2018). The study further stated that widespread ignorance, limited and/or incorrect information, and misconceptions about HIV and AIDS are responsible for causing social stigmatization (Kok et al., 2018).

In this study there was a different view regarding discrimination and stigma, a majority of nursing students reported that the same bio-safety measures should be applied regardless of a patients' HIV status. According to the TPB individual attitudes toward the behaviour includes, behavioural belief, evaluation of behavioural outcome, objective norm, normative beliefs, and the motivation to comply. The HIV and AIDS training course and nursing ethics given to nursing students has a greater influence on their professional behavior.

In the present study, the majority of nursing students reported that PLWHA should be treated the same irrespective of their HIV status. They strongly agree that HIV+ women have a right to become pregnant, healthy HIV+ person should be allowed to teach, and that they would care for PLWHA in their homes, would share a bathroom and would buy food from HIV+ vendor (Table 4.11). In this study the majority of nursing students reported that AIDS is not God's punishment and that shows empathy (Frain, 2017). Using the Wilcoxon signed-rank test they saw that educational experience produced statistically significant changes when compared with the same statements used in this study (Table 4.16). In general, in the present study, the attitudes towards AIDS and people with HIV were tolerant and positive and those nursing students with empathetic attitudes were more willing and prepared to care for PLWHA. According to (Erikkson & Grundin, 2010) in India and Memish et al. (2015) in Saudi Arabia students having a high AIDS knowledge level frequently behave less negatively towards PLWHA and refraining attitudes. A lack of knowledge and stigmatising attitudes of healthcare workers, including nursing students, contribute to difficulties PLWHA have accessing prevention, care, and treatment services (Frain, 2017).

According to Ajzen (2006) in TPB the assumption is made that perceived behavioural control, predicts actual behavioural control, but this is not always the case. Because social factors such as age, fear, environment and many more should always be taken into consideration. The findings

support the notion that perceived behavioural control often reflects in actual behavioural. This is because nursing students believe that if they receive the necessary training they can conduct VCT, a skill that could change someone's life. Thus, because someone knows his or her HIV status, they can start treatment to prolong life or, if negative, he or she might initiate behaviour to remain negative.

In this study, the participants correctly reported that parents of youth (47.6%, $n=119$) and sexual partners current (49.4 %, $n= 124$) and past (56.9%, $n=141$), should not be informed if a person tests positive for HIV (Table 4.15) as this would be a violation of a patient's right to confidentiality. However, there were more than 50% (51.9%, $n=129$) of participants who reported that sexual partners and family members should be informed (Table 14.15), which is against hospital policy. According to Sehume et al. (2012) students lacked HIV legislation knowledge. It is expected that nursing students should be fully aware of universal precautions as per healthcare policy or protocols, as it is expected that nursing students take blood, urine and sputum from PLWHA patients. Seventy per cent ($n=234$) of the remaining participants felt either very comfortable or somewhat comfortable to take laboratory samples from a person living with HIV (Table 14.12). This statement is supported by Suominen et al. (2015) who reported that nursing students' willingness to provide care for PLWHA was associated with their attitudes.

The researcher agrees that nursing students should be exposed to HIV and AIDS care programmes, in which help to understand the guidelines on how to deal with the HIV and AIDS epidemic and show nursing students aspects of the healthcare management of HIV and AIDS which could help them, when they are qualified, registered nurses, to render good service.

5.3 Practice of nursing students towards HIV and AIDS

In this study the largest proportion of participants fell in the fair amount group (36.6%, $n=94$). Most participants (94.6%, $n=243$) have met someone living with HIV, some of whom they met at clinical settings (Table 4.15). In contrast to the findings of this study, Kok et al. (2018) identified that almost all of the nursing students (99.1%) reported that they had never met a patient with HIV or AIDS. It could be assumed that the study was conducted in a low HIV prevalence area, whereas this study was actually conducted in a high HIV prevalence area in the world. Therefore, the opportunity to be exposed to PLWHA is high among the nursing students.

In the present study, regarding preparedness to interact with HIV positive clients, almost 92% ($n=236$) of participants reported that they were very prepared to interact with HIV positive clients (Table 4.19). Also in the statement, asking that if this organization offered trainings or sensitization sessions about HIV and AIDS, would you want to attend? Almost 85% (84.1%, $n=216$) reported they would be interested in attending training for VCT (Table 4.23). Nursing students in this study reported that if they had the necessary knowledge of how to conduct VCT this might build their confidence in their ability to act with no fear, because of the confidence gained during VCT training. Almost three quarters (73.8%, $n=189$) of the participants had not attended HIV Voluntary Counselling and Testing training which could be due to it not being integrated in their nursing school curriculum. Holla et al. (2015) in India, suggested incorporating Integrated Counselling Testing Centre (ICTC) into school curricula along with increasing awareness of HIV and AIDS, knowledge of HIV transmission routes and high- risk behaviors.

Ajzen (2006) argued that behavioral intention is an indication of how hard people are willing to try and how much effort they are planning to exert, in order to perform a certain behavior. Findings in

practice show that nursing students intended to go for VCT training and attend sensitization sessions about HIV and AIDS if it was offered by the School of Nursing as part of its HIV prevention programme. Nursing students showed determination and willingness to be trained in conducting VCT.

About 64.8% ($n=164$) of the participants reported that they were prepared to refer an HIV positive patient elsewhere for services they could not provide (Table 4.18). The statement was supported by Holla et al. (2015) of Mangalore, in India who conducted a study among 105 pretest counselling clients who visited integrated counselling and testing centres (ICTC) for the first time. Three of the ICTCs were in tertiary care hospitals nevertheless, it was revealed that most of the clients were not aware of the ICTC function and activities. In their study, they found that awareness of ICTC, which helps to provide information as well as testing people for HIV, was lacking among their population. They suggested the incorporation of ICTC into the school curricula, along with increasing awareness of HIV and AIDS, knowledge of mode of transmission and high-risk behavior. Generally, the awareness of ICTC and its function among the people is poor, therefore it is vital to train nursing students and not to wait until they are qualified to do basic training on how to conduct VCT.

The present study shows that there is an inability to counsel PLWHA. Therefore VCT should become embedded in preservice modules of undergraduate nursing training (Ngcobo & Mchunu 2019). An explanation of results for the nursing student's fear of contracting HIV during their clinical placement might be their lack of know how in conducting counselling to those who are affected and infected with HIV and AIDS. The findings showed that more than 80% of nursing students would be interested in attending training if it was offered (Table 4.16). HIV VCT is a skill which needs to be developed in order to change personal and professional behavior among nursing students. There is a need to devise curricula and HIV VCT modules to assist all nursing students, specifically final-years

to build confidence in how to talk to and give emotional support to people who are affected and infected by HIV and AIDS (Holla et al., 2015).

Nursing students are placed at clinics and hospitals during their clinical training, and this exposure gives nursing students practical experience in the field of nursing. Almost two thirds (66.9%, $n=170$) of the participants had provided healthcare services to patients, about 25% of participants had provided education and counselling had been provided by 7.9% of participants (Table 4.24). Özakgül et al. (2015) in Turkey reported that previous experience with HIV and AIDS patients was the single factor that had the greatest positive impact on nursing students' attitudes.

It is time for nursing students to be heard, they are saying that they are not fully trained to deal with the HIV epidemic and in this study, they clearly state that they are willing to go for VCT training. The study found that nursing students were prepared to go for VCT training. This could be due to the lack of access to such training. Ngcobo and Mchunu (2019) identified that not all students at the various levels of nursing training got the opportunity to participate in HIV and AIDS educational programmes. Per the findings, the willingness of the students for training should draw the attention of those concerned to provide training in HIV and AIDS for all students in nursing training.

Ngcobo and Mchunu (2019) study's findings are therefore also anticipated to restore hope to PLWHA HIV and AIDS sufferers. The findings are seen as extremely encouraging, because all of the students surveyed for the study quite evidently experienced significant gains in their knowledge of HIV and AIDS by participating in the educational programme. This training can be expected to translate into a higher quality of clinical HIV and AIDS healthcare being rendered to patients by nursing professionals in general (Ngcobo & Mchunu, 2019).

Other studies, Makhado and Davhana-Maselesele (2016) from Limpopo, South Africa, and Frain (2017) in United States have indicated that every nurse should be knowledgeable about the prevention, testing, treatment and chronicity of the disease in order to provide high-quality care to people with or at risk of HIV.

Similarly to this study, it is noted that in the study by Ishimura (2017) in Vietnam, the majority of participants expressed a willingness and preparedness to care for patients infected with HIV (55.8%). This study revealed that Vietnamese nurses were somewhat willing to care for patients infected with HIV or HBV/HCV, and this was associated with individual confidence in protecting themselves against infection and with negative attitudes towards HIV and Hepatitis B and C vaccine. The study further states that, establishing a positive safety culture and providing appropriate professional education, to help reduce the stigma towards infected patients, offers an effective way forward to improve the quality of care in Vietnam, as elsewhere.

It is evident from the current results that the participating nursing students, across all levels of study, reported that training is needed by the students to be able to learn to conduct VCT of a client. Overall, the findings of this study showed that nursing students' HIV and AIDS empathetic attitudes were positively influenced by the nursing curriculum. However, fear of contagion and HIV transmission routes needs to be addressed and planned HIV and AIDS healthcare management programmes needs to be reinforced, because increased knowledge attained by students has an impact on the effective clinical practice of nursing.

5.4 The effect of nursing students' demographics on their knowledge, attitudes, and practices

This study clearly showed that HIV education can change attitudes and behaviours towards PLWHA. In the study, it was observed that nursing students in their third year of training exhibited better

knowledge of HIV compared with those in the other year levels. This is probably due to their current exposure to HIV and AIDS knowledge acquired through the community nursing and midwifery training being offered at that level. Students at this level are mostly exposed to knowledge in communicable diseases, and are usually based in community clinics. In contrast, Kok et al. (2018) found that nursing students' knowledge of HIV and AIDS improve with each year of study, and that their attitudes are not positively influenced by the nursing curriculum and their attitudes needed to improve. They further emphasized that nursing students' willingness to provide care decreased as negative attitudes toward AIDS increased (Kok et al., 2018).

Influence of sexual orientation on antiretroviral therapy was not significant because nursing students have a duty to care, and their profession requires them to know about ARVs and HIV management. In terms of sexual orientation and behavior, it unethical and unprofessional to discriminate or stigmatize people. This statement is supported by descriptive in this study the majority of nursing students were well informed about antiretroviral therapy and they reported that there is no need to know the sexual orientation or behavior of a client in healthcare setting.

Education level on attitude was significant but gender, age and healthcare setting had no significant influence on attitude Nursing students' attitude were positively influenced by the nursing curriculum. This statement is supported by descriptive of this study. In this study the results indicate that education level has a significant effect on where the participants fall on the empathetic attitude score, with fourth-year nursing students scoring significantly higher on the empathetic attitude score than first, second and third-years. This is supported by the Kok et al. (2018) study, who revealed that there was a statistically significant difference between first and fourth-year students on the AIDS attitude scale.

Education level, gender, age and healthcare setting had no significant effect on practice. This statement is supported by descriptive in the study and the theory adopted in this study. The intention to act in nursing profession doesn't matter which year level of study, gender, age and healthcare setting, but one is duty bound to care according to the profession.

5.5 The association between undergraduate nursing students' knowledge, attitudes and practices regarding HIV and AIDS

The association between attitude and knowledge was significant. The findings indicate that there is a relationship between knowledge and attitude. Significantly, more participants, with a high level of knowledge had a positive attitude than participants with a moderate level of knowledge. Analysis of previous studies shows that they have developed the hypothesis that knowledge has influence on attitudes (Erriksson & Grundin, 2010; Frain 2017; Kok et al., 2018). Thus, supporting Ajzen's (2006) position that knowledge predicts attitudes.

The results of this study showed that there was no significant impact of practice on knowledge and attitude. HIV and AIDS education is embedded in nursing students' curricula. Therefore, students know about the risks of HIV transmission through sex, blood and other body fluids and therefore are aware of the need to use universal precautions, and to practice safe sex in order to protect themselves from HIV transmission. This statement is supported by the descriptive results in the study, that use same bio-safety for all, despite status and more sexual partners increases risk of contracting HIV (Table 4.2). TPB is a theory that links one's beliefs and behavior from intentions to action (Ajzen & Fishbein, 1980; Ajzen, 1985). However, TPB factors like skills, religion, cultures etc. are not taken into consideration but, they might have an influence on someone's practices or behavior, such as no sex before marriage, therefore they have to abstain from sex. Ngcobo and Mchunu (2019) study showed that all of the nursing students surveyed for their study had obviously experienced significant

gains in their knowledge of HIV and AIDS from the programme. Further research can be done to cover more demographics, for example, religion, race, residing at a hostel or at home etc. to investigate their relationship with KAP.

5.6 Conclusion

This chapter discussed the findings related to knowledge, attitude and practices of undergraduate nursing students regarding HIV and AIDS. Including the effects of demographics on their knowledge, attitudes and practices and the association between their knowledge, attitudes and practices toward HIV and AIDS. In conclusion, the results of this study identified that the majority of nursing students have a moderate level of knowledge regarding HIV and AIDS. Overall they have high empathetic attitudes but some have refraining attitudes. The refraining attitudes were present because of a fear of contracting HIV and a general lack of knowledge about HIV and AIDS. This study highlighted nursing students' preparedness to take care of PLWHA which increases as empathetic attitudes towards PLWHA increase. The fourth-years had more empathetic attitude than the first, second and third-years. The third and fourth-year nursing students had greater knowledge regarding HIV and AIDS than the first and second-year nursing students. The results were significant; linking the new evidence with the past literature.

The following chapter concentrates on summarizing the findings, making recommendations and presenting the strength and limitations of the study.

CHAPTER 6

Summary of Findings, Limitation, Strength, Recommendations and Conclusion

6.0 Introduction

Chapter six presents a summary of the findings, strengths and limitations of the study and recommendations. This study is aimed at investigating HIV and AIDS related knowledge, attitude and practices (KAPs) of nursing students at a higher education institution in the Western Cape.

6.1 Summary of findings

6.1.1 Knowledge

Overall, this study identified that there is a moderate level of knowledge related to HIV and AIDS among nursing students. The findings showed that third and fourth-year students were more knowledgeable than first and second-year students. This knowledge is also significantly associated with an empathetic attitude towards PLWHA. An empathetic attitude refers to when a person has empathy that is the ability to put yourself in someone else's shoes. Empathetic people can identify, understand, feel and manage not only their own feelings, but also the feelings of other people. Empathy is used to describe a wide range of experiences. An attitudes means deflecting from a neutral stand point (Eriksson & Grundin, 2010). Empathy and attitude are important attributes. The findings of this study indicate that there are still some misconceptions about HIV transmission among the nursing students; for example that transmission can happen as a result of a mosquito bite, sharing silverware and bathing with a person infected with HIV. Findings also show that some of the nursing students believe it is likely that a healthcare provider will become infected with HIV while providing care to an HIV positive patient. This misinformation might result in a fear of contracting HIV when taking care of PLWHA.

6.1.2. Attitudes

This study also identified that nursing students had empathetic attitude towards PLWHA because they mostly felt that healthy HIV positive people should be allowed to teach, that HIV positive people have the right to become pregnant and that they would buy food from HIV positive vendors and, the majority of students felt that AIDS is not God's punishment. They also believe that testing patients for STDs should be part of the HIV prevention programme.

It was also observed that most nursing students worry about being infected with HIV while caring for HIV and AIDS clients and that some of them were nervous about an appointment with a client with HIV and AIDS. Some felt uncomfortable taking laboratory samples from a person living with HIV and AIDS which lead to high levels of refraining attitudes. The findings revealed that positive attitude levels increase as the year of study increases; fourth-year nursing students were more empathetic than all the other years.

6.1.3 Practices

With regard to the preparedness and clinical exposure of the nursing students, the findings revealed that a majority of nursing students knew or had, in clinical practice, met a person infected with HIV and that they were keen to take care of people living with HIV and AIDS, even though some of them were scared of being infected with HIV. The majority of participants reported that they lacked training in voluntary counselling and testing of HIV. As a result, undergraduate nursing students showed greater aspiration to undergo trainings and sensitization sessions in order to equip themselves with the knowledge and skills needed to provide efficient voluntary counselling and testing for HIV. Nurses remain a crucial part in the management and care of HIV positive people, especially in resource constrained settings where they fulfil a variety of roles and functions. Competent HIV healthcare providers are required to achieve optimal clinical outcomes for all people living with HIV

(Muthathi et al., 2017). Fear of contagion can play a part in the shortage of healthcare professionals, such as nurses who are the pillars of a healthcare system. The study also identified the need to strengthen HIV education in all aspects of HIV and AIDS. Particular emphasis should be placed on the training of nursing students who are able to provide emotional support, and have kind-hearted feelings towards PLHIV. The findings regarding nursing students' occupational risk perception revealed that what worries them the most was the risk of getting infected with HIV.

Findings also indicated that the majority of nursing students felt that they were not fully prepared to provide healthcare services such as VCT to PLWHA. Good infection control practices that include protective measures for all clients, regardless of the client's HIV status, should be followed by all nursing graduates in accordance with the guidelines of universal precautions. Only a few nursing students showed a lack of knowledge of infection control procedures and required some clinical guidance on universal precautions.

The theory of planned behaviour guiding this study was developed to predict behaviour where individuals demonstrate incomplete volitional control; the actual willful control over behaviour. The findings of this study show how nursing students' beliefs influence their intention to adopt VCT in the course of their work. It was also revealed that the majority of participants have the intention to abstain from sex because they felt that sex is a dangerous behaviour. Perceived norms; participants knew that a healthy looking person can be HIV positive. Subjective norms; participants wondered if their partners would accept it if they were to be HIV positive. The findings showed that nursing students were confident that they are prepared to care for PLWHA which is perceived behavioural control.

6. 2 Limitations

There were some limitations to this study. The sample size for this quantitative survey study was large enough to generalize the findings to the study setting. However, the study was limited to one school of nursing at only one selected higher education institution in the Western Cape province of South Africa. Therefore, the findings cannot be generalized to other similar settings.

Time and financial constraints were other limitations. They prevented the researcher from expanding the study to a wider representation of the Western Cape and into other provinces. However, despite these limitations the study offers a general understanding of the knowledge, attitude and practices of nursing students towards PLWHA, which can be useful for the evaluation of existing nursing programmes and existing policy guidelines.

This study used a survey design, which was relatively economical, but it was unable to assess progress or change over time in the same way that a longitudinal study may have done. Quantitative research is impersonal and does not document the words of participants which provides a limited understanding of the context of participants and is largely research driven (Polit et al., 2014). Therefore, a qualitative study could help to explore the subjective feeling of the nursing students and reflect their experiences in the context of this study.

6. 3 Strength

The selection process was well designed and the sample was representative of the study population, therefore findings can be generalized, as participants were randomly selected (Gerrish & Lathlean, 2015). The findings can represent only the population of the four-year undergraduate bachelor of nursing course at a university in the Western Cape. The research is intended to be a vehicle for enabling nursing students to report on their training and to use the outcomes to inform future practices

(Frain, 2017). Nursing students reported that they needed to be trained to be able to do VCT to prevent the spread of the epidemic and to curb their fear of contagion. As a general rule, the more favorable attitude and subjective norm, the greater the perceived control, the stronger the person's intention to perform the behavior in question should be, which is to be able to do perform HIV testing and counselling.

6. 4 Recommendations based on the findings

6.4.1 Recommendation for training

This study confirms the findings of other studies that an overall lack of knowledge does result in a fear of contagion. However, good overall knowledge does translate into empathetic attitudes and preparedness to take care of PLWHA. Nursing students need to be empowered with updated HIV knowledge in order to cope with the epidemic and avoid their fear of PLWHIV. Class sessions promoting sensitization to HIV should be implemented for undergraduate nursing students to prevent gaps in their knowledge and stop misinformation and misconceptions that lead to refraining attitudes.

6.4.2 Recommendation for practice

In this study the students expressed their need for more training on how to conduct VCT of HIV. A comprehensive training module on VCT needs to be included in their training curricula. In particular, more emphasis should be placed on the benefits of VCT and, students should be helped to internalize the risk of HIV so that they can take the necessary preventive measures and be willing to conduct VCT policies. Nursing students, especially those in their final-year who are soon to graduate, need to understand and practice VCT, so that they are able to appropriately and sensitively counsel people affected by HIV and PLWHA. That may have a tremendous influence on student readiness to care for individuals with HIV and AIDS. Almost 100% of participants in this study felt that sexual abstinence is the best way to prevent the spread of this epidemic because condoms do not guarantee

100% protection. Positive reactions should be reinforced, for example, when nursing students showed a willingness to take care for PLWHA, guest speakers who are HIV positive could be invited to address the students. On the other hand, nursing students who are not willing to take care of PLWHA need to be reminded of their ethical obligation as a nurse.

6.4.3 Recommendation for policy/ guidelines

Nursing students should have a good knowledge of HIV and AIDS to fight stigma and encourage regular, confidential testing for HIV, including of themselves. It was also found that students of all years of study agreed that if clients test HIV positive, the clinic should inform their family or sexual partner. This however, is in violation of patients' rights as in South Africa PLWHA have the right to confidentiality. Prior to being exposed to HIV infected patients in their clinical practice, Nursing students need to attend more training workshops on values clarification. In the education and healthcare sector, HIV and AIDS policy interventions are required to strengthen rights to confidentiality.

6.4.4 Recommendation for further research

This study used a cross-sectional study. However, in a longitudinal study, researchers conduct several observations of the same subjects over time. The benefit of longitudinal research is that it allows researchers to look at changes over time and individuals are observed over the length of the study period. In longitudinal studies, changes can also be tracked so that the relationship between cause and effect can be discovered. It would have been good to assess changes over time, especially when it comes to the attitude, it may also have been helpful in evaluating the progress and learning process of nursing students regarding refraining attitudes. The researcher suggests adding a qualitative research design to unpack the emotional feelings regarding HIV and AIDS and the availability of emotional support to undergraduate nursing students. In order to ensure quality of care for PLWHIV

and to fight the HIV and AIDS pandemic, further research and follow up studies need to be done on knowledge, attitudes and practices of nursing students.

6. 5 Conclusion

In South Africa, the incidences of HIV continues to grow rapidly as did the number of AIDS patients (Stat SA, 2019). Indeed, South Africa has one of the highest rates of infection in the world (UNAIDS, 2019). Nurses and nursing students are in the forefront of fighting the pandemic, hence it is crucial for the nursing students to have adequate knowledge about HIV and AIDS. Nursing students are future healthcare providers. Therefore, studying student's knowledge about HIV and AIDS, attitudes towards PLWHA and practices regarding their preparedness to take care of PLWHA (KAP) is vital. In South Africa, KAP studies of nursing students are very scarce, hence this study focusses on undergraduate nursing students in the Cape metropole region of the Western Cape, South Africa.

The objectives of the study were to determine undergraduate nursing students' knowledge, attitude and practices regarding HIV and AIDS. The general concept of the study is directly related to the Theory of Planned Behaviour. The study indicated that nursing students feared contagion. TPB helps programme implementers to design interventions that effectively address specific behaviours. Nursing students believe that if they can acquire the necessary knowledge to conduct proper VCT, this may build their confidence in their ability to behave differently towards HIV and AIDS patients. According to TPB, their intentions might be to alleviate their fears of contracting HIV.

The fact that the level of knowledge was moderate and that nursing students had fear of contagion, is an indication that the HIV and AIDS training provided to nursing students does not equip them with sufficient knowledge to alleviate fear. Overall, there is a need for collaboration between the nursing schools and the clinical learning environment to sustain students' adjustment to clinical

practice related to HIV and AIDS so as to advance nursing care for PLWHA. The year of study of the nursing students were found to be significant predictors of positive attitude regarding PLWHA. The majority of nursing students recognize the importance of the use of the same bio-safety for all, despite people with HIV following good practice and universal precautions for infection control.

On average, fourth-years scored significantly higher on the empathetic attitude index than first, second and third-years. The Chi-square test indicated that there is a significant difference between the healthcare setting groups regarding their level of knowledge ($\chi^2(2)=9.281, p<.05$). Significantly more participants in clinics had a high level of knowledge than participants in the hospitals.



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APPENDICES

Appendix A: KAP Questionnaire

General Information

We will start with some basic questions about you and your work.

1. What is today's date?

___ / ___ / ___

day month year

2. What healthcare setting was your last placement?

- Clinic
- hospital

3. How long have you worked in a clinic or hospital?

- Less than 1 month
- 1 to 4 months
- 4months to 1 year
- More than 1 year

4. What is the level of your study in this institution?

Abstract left overs

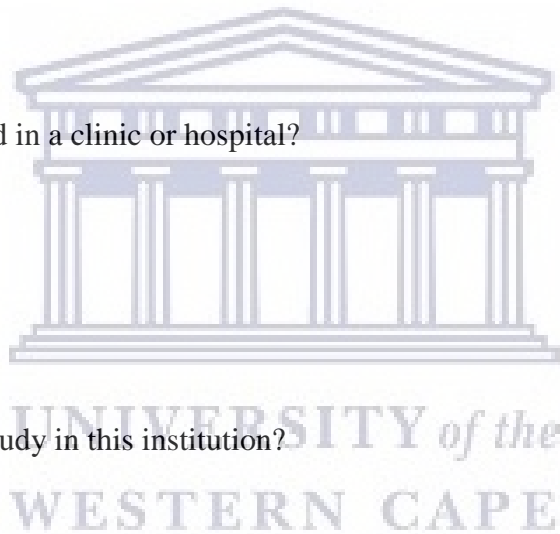
- 4th year
- 3rd year
- 2nd year
- 1st year

5. Do you have direct contact with patients as a student?

- Yes
- No

6. What gender do you identify as? (*Please mark only one answer*)

- Female
- Male



- Trans person
- _____ (write your term of choice)

7. How old are you?

- Under 18
- 18 to 24
- 25 to 39
- 40 or over

8. To your knowledge, have you ever met someone who is HIV-positive?

- Yes
- No

9. In the past six months, did you attend any trainings or sensitization sessions about HIV AND AIDS?

If yes, who provided the training? **(Please mark all that apply)**

- At the clinical placement
- Educational institution
- Other _____

If no, have you ever attended a training or sensitization session about HIV AND AIDS?

- Yes
- No

10. How prepared do you feel to interact with HIV-positive clients at your placement?

- Very prepared
- Somewhat prepared
- Unprepared
- Not applicable (I do not interact with clients)

11. Should there be trainings or sensitization sessions offered about HIV AND AIDS, would you want to attend?

- Yes
- No

- Maybe

12. Have you ever heard of antiretroviral therapy?

- Yes
- No

Please mark only one answer for each statement. Please TICK the appropriate box to indicate if it is true, false or if you are not sure. False I'm not sure

STATEMENT	TRUE	FALSE	I AM NOT SURE
13	A person can become infected with HIV by		
A	having unprotected oral sex		
B	bathing in the same water as an HIV-positive person		
C	sharing needles		
D	receiving a blood transfusion that has not been screened for HIV		
E	getting a mosquito bite		
F	sharing silverware with an HIV-positive person		
G	sharing razor blades that have not been disinfected		

Please mark only one answer for each statement. Please **TICK** the appropriate box to indicate if it is true, false or if you are not sure.

STATEMENT	TRUE	FALSE	I AM NOT SURE
14	A person can <i>reduce</i> his or her risk of becoming infected with HIV if he/she		
A	abstains from sexual intercourse		
B	maintains a healthy diet		
C	uses a new, unused needle for each injection		
D	always uses a condom during sex		

Please mark only one answer for each statement. Please **TICK** the appropriate box to indicate whether you agree, disagree or are not sure.

STATEMENT	AGREE	DISAGREE	I AM NOT SURE
15	Having more sexual partners increases the risk of becoming infected with HIV		
16	I can tell by looking at someone if he/she is infected with HIV		
17	Despite receiving a negative HIV test result, a person could still be infected with HIV		

Please mark only one answer for each statement. Please TICK the appropriate box to indicate if it is true, false or if you are not sure.

STATEMENT	TRUE	FALSE	I AM NOT SURE
18	A woman can transmit HIV to her child		
A	during pregnancy		
B	during childbirth		
C	through breast-feeding		

Please mark only one answer for each statement.

19. Do you feel that if a client tests positive for HIV, the clinic should inform the client's *family* of the results?

- Yes, the clinic should inform the client's *family*
- No, the clinic should NOT inform the client's *family*

20. Do you feel that if a client tests positive for HIV, the clinic should inform the client's *sexual partner(s)* of the results?

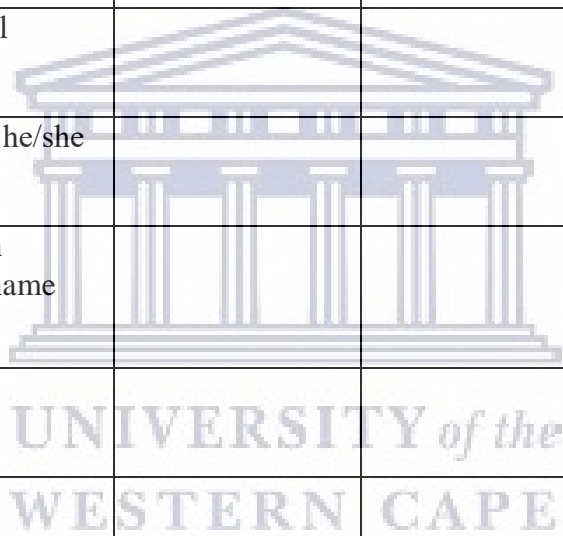
- Yes, the clinic should inform the client's *sexual partner(s)*
- No, the clinic should NOT inform the client's *sexual partner(s)*

For each of the following statements, please choose the answer that best reflects your personal feelings. Please mark only one answer for each statement.

STATEMENT		STRONGLY AGREE	SOMEWHAT AGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE
21	An HIV-positive woman has the right to become pregnant				
22	An HIV-positive teacher should be allowed to teach				
23	Most people living with HIV were infected because of irresponsible behaviour				
24	I would be willing to care for a family member who had AIDS in my home				
25	If I were infected with HIV and told my partner, he/she would leave me				
26	I would feel comfortable sharing a bathroom with a person I knew had HIV AND AIDS				
27	If I found out that a food or vegetable vendor was HIV-positive, I would feel comfortable buying from him/her				
28	AIDS is God's punishment for immorality				

Please mark only one answer for each statement. Please **TICK** the appropriate box.

STATEMENT	SHOULD BE NOTIFIED	SHOULD NOT BE NOTIFIED	I AM NOT SURE
<p>29. According to the protocols adopted by your clinic or hospital, when a client receives a positive HIV-test result, which of the following people / places should be notified of the results?</p> <p><i>If you are not sure whether someone should be notified, please mark "I'm not sure."</i></p>			
A	The client		
B	The client's current sexual partner(s)		
C	The client's past sexual partner(s)		
D	The client's parents, if he/she is a youth		
E	The Ministry of Health (notification of client name and status)		
F	The client's employers		
G	The client's insurance company		



Please mark only one answer for each statement. Please TICK the appropriate box.

STATEMENT	VERY WORRIED	SOMEWHAT WORRIED	A LITTLE WORRIED	NOT WORRIED
30. If you were helping clients who were HIV-positive as part of your work, how worried would you be about				
A	Becoming infected with HIV?			
B	The possibility that other clients would no longer come to you for care?			
C	Other people thinking that you are also infected?			
D	Whether or not you have received enough training on HIV AND AIDS?			

31. Which of the preceding issues (30 a-e) worry you the most?

Please mark only ONE of the following options:

- becoming infected with HIV
- the possibility that other clients would no longer come to you for care
- other people thinking that you are also infected
- whether or not you have received enough training on HIV AND AIDS
- none of the preceding issues worry you at all

32. Do you provide services to clients (i.e. healthcare, education, counselling)?

- YES,
- NO

The following questions refer to your work responsibilities and previous training on HIV Voluntary Counselling and Testing.

33 Which one of the following services do you most frequently provide?

(Please mark only one)

- Medical/nursing (healthcare)
- Counselling
- Education
- Other *(please specify)*: _____
- None

34. In the past six months, did you attend any training on HIV Voluntary Counselling and Testing (VCT)?

If yes, who provided the training? **(Please mark all that apply)**

- educational institution
- Other _____
- No

If no, have you ever attended a training on HIV VCT?

- Yes
- No

Please mark only one answer for each statement. Please TICK the appropriate box.

STATEMENT		COMPLETELY AGREE	SOMEWHAT AGREE	SOMEWHAT DISAGREE	COMPLETELY DISAGREE
35	As a healthcare provider, I need to know the <i>sexual orientation</i> of my client				
36	As a healthcare provider, I need to know about the <i>sexual</i>				

<i>behaviour</i> of my client				
-------------------------------	--	--	--	--

37. If you realized that your next appointment was with a client who had AIDS, how nervous would you feel?

- Very nervous
- Somewhat nervous
- Not nervous
- Not applicable (I do not have appointments with clients)

Please mark only one answer for each statement. Please TICK the appropriate box.

STATEMENT		VERY PREPARED	SOMEWHAT PREPARED	NOT AT ALL PREPARED
38. If a client's HIV test results are positive, how prepared do you feel to...				
A	provide him/her with appropriate health services?			
B	counsel him/her appropriately?			
C	refer him/her elsewhere for services you cannot provide?			

39. How comfortable would you feel taking laboratory samples from a person living with HIV?

- Very comfortable
- Somewhat comfortable
- Somewhat uncomfortable
- Very uncomfortable
- Not applicable (I do not take lab samples)

40. If you were counselling an HIV-positive woman about her contraceptive options, which of the following best represents what you would do?

- I would recommend condoms over all other contraceptive options.

- I would recommend abstinence over all other contraceptive options.
- I would recommend sterilization over all other contraceptive options.
- I would recommend use of condoms and an additional method at the same time.
- I would be unsure which option to recommend.

For each statement below, please check the appropriate box to indicate if it is true, false, or if you're not sure.

STATEMENT		TRUE	FALSE	I AM NOT SURE
41. The possibility of mother-to-child transmission of HIV can be reduced if:				
A	the mother receives antiretroviral medication treatment during the pregnancy			
B	the baby is delivered via caesarean section			
C	the mother is tested for HIV during prenatal care			

42. How likely is it that a healthcare provider will become infected with HIV by providing care to an HIV-positive client?

- Very likely
- Somewhat likely
- Not very likely
- Not likely at all
- I'm not sure

Statement True False I'm not sure

For each statement below, please check the appropriate box to indicate if it is true, false, or if you're not sure.

STATEMENT		TRUE	FALSE	I AM NOT SURE
43. Antiretroviral therapy...				
A	helps people living with HIV live longer			
B	can cure an HIV-positive client			
C	can decrease the risk of HIV transmission			
D	frequently has side effects that make clients feel physically ill			

For each statement below, please check the appropriate box to indicate if it is true, false, or if you're not sure.

STATEMENT		TRUE	FALSE	I AM NOT SURE
44	HIV-positive clients should be separated from clients of unknown HIV status to protect uninfected clients			
45	A provider should take the same bio-safety (protective) measures with all clients, regardless of the client's HIV status			
46	A client with HIV can get his/her CD4 count to know how advanced his/her HIV infection is			
47	If someone is infected with HIV, he/she has a higher risk of becoming infected with other STIs			
48	If someone is infected with certain STIs, he/she has a higher risk of becoming infected with HIV			

49	Sexual behaviours that make someone susceptible to HIV also make him/her susceptible to other STIs.			
----	---	--	--	--

Statement True False I'm not sure

50. Do you think that STI testing for clients should be a part of the HIV prevention program at your placement?

- Yes
- No
- I'm not sure

Thank you for your cooperation and participation!



Appendix B: Ethical clearance and project registration from the University of 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

07 December 2017

Ms D Nongalaza
School of Nursing
Faculty of Natural Science

Ethics Reference Number: HS17/10/24

Project Title: Undergraduate nursing students' knowledge, attitude and practice towards HIV and AIDS at a higher education institution.

Approval Period: 07 December 2017 – 07 December 2018

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the 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 that reads 'Josias'.

*Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape*

PROVISIONAL REC NUMBER - 130416-049

Appendix C: Permission to conduct Research at the University of Western Cape



Administration Building, 1st Floor
ashaikjee@uwc.ac.za, nschoeman@uwc.ac.za
021 959 2110

12 February 2018

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE UNIVERSITY OF THE WESTERN CAPE

Name of Researcher	: Cunthia Nontuthuzelo Nongalaza
Research Topic	: Undergraduate nursing students' knowledge, attitude and practice towards HIV and AIDS at a higher education institution
Date of issue	: 12/02/2018
Reference number	: UWCRP120218CNN

This serves as acknowledgement that you have obtained and presented the necessary ethical clearance and your institutional permission required to proceed with the above referenced project.

Approval is granted for you to conduct research at the University of the Western Cape for the period 12 February 2018 to 7 December 2018. You are required to engage this office in advance if there is a need to continue with research outside of the stipulated period. The manner in which you conduct your research must be guided by the conditions set out in the annexed agreement: *Conditions to guide research conducted at the University of the Western Cape*.

The University of the Western Cape promotes the generation of new knowledge and supports new research. It also has a responsibility to be sensitive to the rights of the students and staff on campus. This office will require of you to respect the rights of students and staff who do not wish to participate in interviews and/or surveys.

It is also incumbent on you to first furnish this office with a copy of the proposed publication should you wish to reference the University's name, spaces, identity, etc. prior to public dissemination.

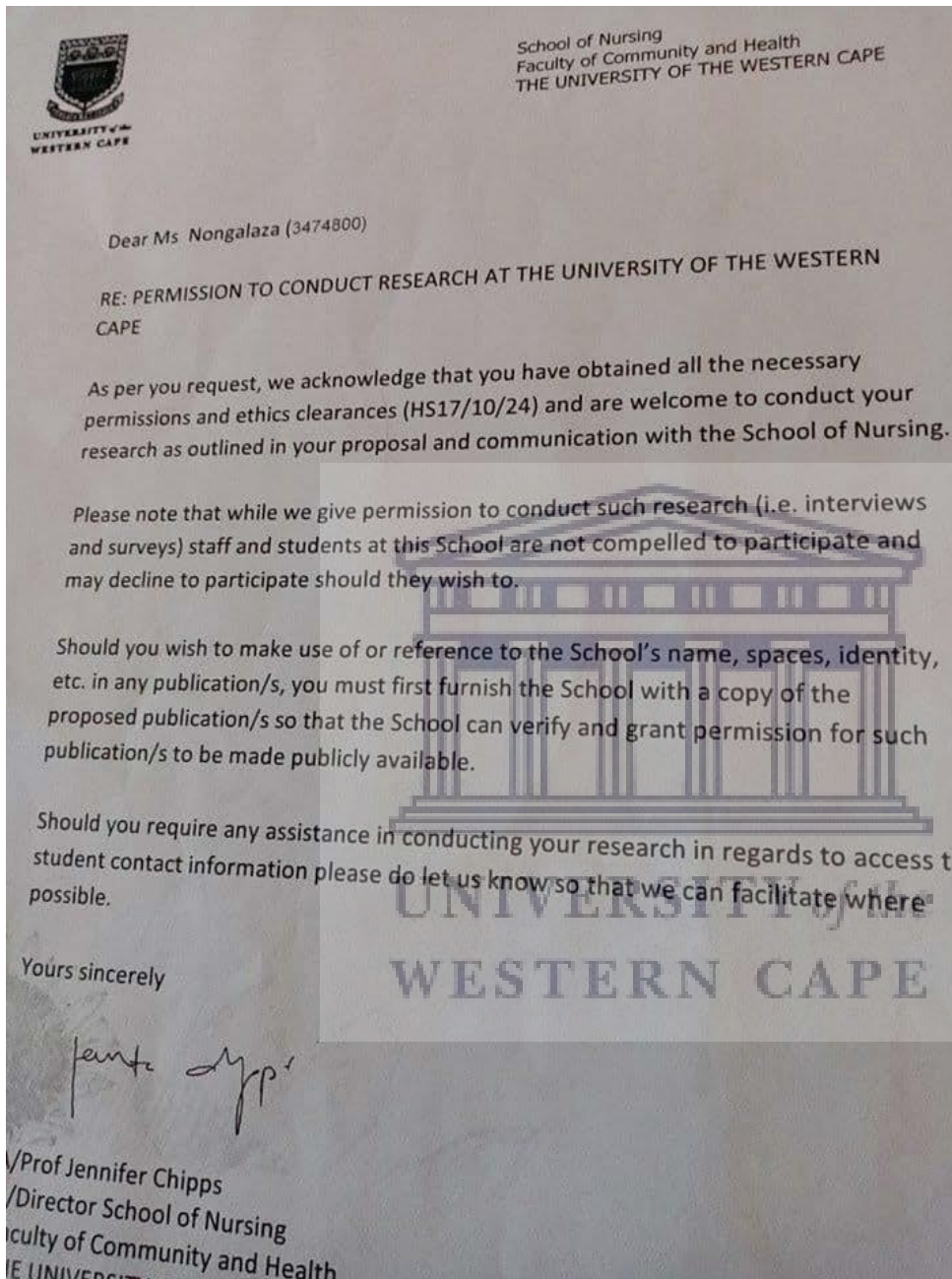
Please be at liberty to contact this office should you require any assistance to conduct your research or specifically require access to either staff or student contact information.

Yours sincerely

DR AHMED SHAIKJEE
DEPUTY REGISTRAR: ACADEMIC ADMINISTRATION
OFFICE OF THE REGISTRAR

UWCRP120218CNN
Page 1 of 3

Appendix D: Permission to conduct Research at the School of Nursing



Appendix E: Consent Form



UNIVERSITY *of the* WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa, Telephone: Tel: +2721-9592271
E-mail: 3474800@myuwc.ac.za

CONSENT FORM

Title of Research Project: *Undergraduate nursing students' knowledge, attitude and practice towards HIV and AIDS at a higher education institution*

The study has been described to me in a 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 name:

Participant's signature:

Date:

Appendix F: Participant information sheet



UNIVERSITY *of the* WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa, Telephone: Tel: +2721-9592271
E-mail: 3474800@myuwc.ac.za

INFORMATION SHEET

Project Title: Undergraduate nursing students' knowledge, attitude and practice towards HIV AND AIDS at a higher education institution

What is this study about?

This is a research project being conducted by Duduzile Nongalaza at the University of the Western Cape. We are inviting you to participate in this research project because as future healthcare professionals, nursing students will play a vital role in contributing to addressing the HIV AND AIDS pandemic. The purpose of this research project is to assess undergraduate nursing students' knowledge, attitude and practices regarding HIV AND AIDS in the Western Cape. The purpose

What will I be asked to do if I agree to participate?

You will be asked to sign a consent form and to please complete the attached questionnaire according to instructions and return it to the researcher after completion. Your participation in this research is completely voluntary. Completing this questionnaire should take less than 15mins. 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.

Would my participation in this study be kept confidential?

To ensure your anonymity, the students' names will not be used in the writing up of the research report or in publications of the study. To ensure your confidentiality, student's information will be treated with strict confidentiality and used only for research purposes. If a report or article is written about this research project, your identity will be protected. We will ensure confidentiality and anonymity so that you are able to answer the questionnaire comfortably and honestly, and with complete answers.

What are the risks of this research?

There may be questions in the study which may evoke emotional distress or pose psychologically risks; the researcher will monitor the participants for signs of distress. Student participants with distress will be referred for assistance and support from mental health services for counselling. The disclosing of information that will cause harm to participants will be avoided by keeping that

information confidential and extreme care will be taken when reporting on research findings so that it will not be intrusive to the participants.

What are the benefits of this research?

The major potential benefit to participants will increase knowledge about themselves either through for introspection or self-reflection. The questionnaire maybe used to assist your higher education institution to develop capacity – building material, trainings and programmes to improve the curriculum and health services related to HIV AND AIDS/STI and Voluntary Counselling and Testing (VCT).

What if I have questions?

This research is conducted by Duduzile Nongalaza from the School of Nursing at the University of the Western Cape. If you have any questions about the research study itself, please contact her at: dnongalaza@uwc.ac.za.

Should you have any questions regarding this study and your rights as a research participant or you wish to report any problems you have experienced related to the study, please contact

Prof J Chipps

Head of department

University of the Western Cape Private Bag X 17

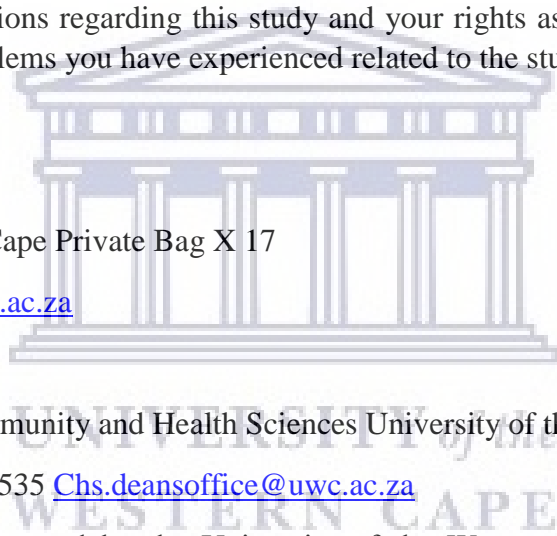
Bellville7535 jchipps@uwc.ac.za

Prof Jose Frantz

Dean of the Faculty of Community and Health Sciences University of the Western Cape

Private Bag X 17 Bellville7535 Chs.deansoffice@uwc.ac.za

This research has been approved by the University of the Western Cape's Senate Research Committee.



Appendix G: English language grammar edit

ENGLISH LANGUAGE GRAMMAR EDIT

This is to certify that the attached titled

Undergraduate nursing students' knowledge, attitudes and practices
toward HIV and AIDS at higher education institutions

prepared and submitted by

Duduzile Nontuthuzelo Nongalaza

UNIVERSITY of the
has gone through an English language grammar edit
WESTERN CAPE
carried out by Duncan Harford.

30/05/2020

DATE



SIGNATURE

Appendix H: Turnitin report

Turnitin Originality Report

Undergraduate nursing students' knowledge, attitudes and practices toward HIV and AIDS in a Higher Education Institution by Duduzile Nongalaza From Thesis (Thesis MN)

- Processed on 12-Jul-2020 15:15 SAST
- ID: 1355354964
- Word Count: 29833

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WESTERN CAPE