Assessing the implementation of Focused Antenatal Care and factors influencing its implementation across health facilities in Jinja District, Uganda.

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KEYWORDS:

Focused antenatal care, antenatal care attendance, facilitating factors, pregnant women, health facilities, Jinja

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DECLARATION

I declare that the work presented herein; Assessing the implementation of Focused Antenatal Care and factors influencing its implementation across health facilities in Jinja District, Uganda, is original and that it has not been submitted for any degree or examination in any other university or institution for the award of a degree or certificate and that all sources of information and data used or quoted have been duly indicated and acknowledged.

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Signature:

Dated: October 05, 2017

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LIST OF ABBREVIATIONS

ANC	Antenatal care
FANC	Focused Antenatal care
HIV	Human Immune Deficiency Virus
ITN	Insecticide Treated Nets
MMR	Maternal Mortality Rate
STI	Sexually Transmitted Infections
UDHS	Uganda Demographic Health Survey
UNICEF	United Nations Children's Fund
UNFP	United Nations Population Fund
WHO	World Health Organization
MoH	Ministry of Health
SSA	Sub- Saharan Africa

OPERATIONAL DEFINITIONS

Antenatal care: Services provided by a health care provider to presumed healthy pregnant women; screening for health and socioeconomic conditions likely to increase the possibility of specific adverse pregnancy outcomes; providing therapeutic interventions known to be effective; and educating pregnant women about planning for safe birth and emergencies during pregnancy and how to deal with them.

Focused Antenatal care (FANC): Goal oriented antenatal care recommended by the World Health Organisation to provide holistic individualized care to pregnant women to support them maintain a normal pregnancy.

Maternal mortality: Death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal mortality Rate: The number of registered maternal deaths due to birth- or pregnancy-related complications per 100,000 registered live births.

Skilled birth attendance: The process of labour and delivery of baby conducted by a trained health worker.

Level of implementation of focused antenatal care: This is a composite indicator of how well antenatal care services have been implemented based on a number of interventions expected per category and rated as either poor, fair or good.

Abstract

Background: The World Health Organization recommends focused antenatal care (FANC) to limit the number of times a pregnant woman makes visits to the health facility (if there is no other need) to four while ensuring that she receives a set of evidence-based interventions at each of the visits to achieve healthy outcomes for the mother and baby. Uganda adopted the FANC approach in 2003 across the health care system although reports indicate that only 48% of pregnant women make at least four visits during the course of their pregnancy and the quality of antenatal care (ANC) services needs improvement. This study investigated FANC implementation and related influencing factors as perceived by the health workers across the health system in Jinja district.

Methods: Data was collected from nine health facilities to assess the implementation of FANC. An observation checklist was used to assess five components of ANC services for 108 pregnant women. Sixteen health workers were interviewed to understand barriers and facilitating factors to implementation of FANC. Data entry and analysis was done in STATA Version 10 and open ended questions were enumerated and explained.

Results: All the health care providers acknowledged that their facilities implemented FANC; 81% rated their knowledge of FANC as good although only 56% had ever received FANC training. Based on the observations, the quality of FANC was generally inadequate; history taking and examination were better implemented across all health facilities, investigation was well implemented at health centre (HC) IV while it performed poorly at HC III and HC II. Across the health facility levels Health promotion was poorly implemented. According to health workers, facilitating factors of FANC implementation included; availability of adequately trained health workers (88%), visual aid charts and supervision of services (56%) while barriers included; inadequate stocks of essential medicines and logistics (88%), limited number of health workers (68%), clients presenting too late for care (56%) and forgetfulness by providers (56%).

Conclusion: Generally, implementation of FANC protocols is inadequate with mostly similarities and a few differences across the health facility levels. An adequate number of trained health care providers was cited as a facilitating factor for implementation while inadequate stocks of essential supplies and a limited number of health workers were cited as

barriers. There is need to invest in supporting health care providers to implement the FANC protocols by understanding the gaps in the process of care and addressing the contextual gaps.

CHAPTER ONE : DESCRIPTION OF THE STUDY

In this first chapter, background information including the importance and the rationale of the study is provided. Furthermore, the study objectives are listed.

1.1 Introduction

Maternal mortality is a global public health problem with an estimated 830 women dying every day due to pregnancy and childbirth related causes most of which occur in the developing world (WHO, 2016). According to the United Nations Inter-agency estimates, there has been tremendous decline in maternal mortality between 1990 and 2015, however sub-Saharan Africa (SSA) still contributes two thirds of the world's annual maternal deaths (Alkema et al , 2015).

Most of the maternal deaths are preventable if women access timely and quality obstetric care provided by skilled health personnel in adequately equipped health facilities. The lifetime risk of dying due to childbirth is influenced by the number of pregnancies and probability of experiencing a life threatening obstetric condition (Population Reference Bureau, 2013). Unfortunately, the lifetime risk of maternal death in low and middle income countries is 1 in 41 compared to 1 in 3,300 in high-income countries due to challenges in access to timely emergency obstetric care and the high fertility rates; Uganda has a life time risk of dying in child birth of 1 in 49 (Population Reference Bureau, 2013; UBOS & ICF, 2017).

Antenatal care (ANC), a pillar in safe motherhood is recommended as one of the strategies to reduce maternal deaths given that it provides an opportunity for the pregnant woman to interface with the health care system to identify pre-existing conditions that may complicate pregnancy and lead to morbidity and or mortality (WHO, 1994). However, the coverage of ANC is low with about 78% and 49% of women in SSA attending at least one ANC and four or more visits respectively during the course of their pregnancy (UNICEF, 2016). This implies that fewer women in SSA receive the benefits of comprehensive ANC.

The Uganda Demographic Health Survey of 2016 reported that the maternal mortality rate (MMR) stands at 336 per 100,000 live births. Furthermore, the report also indicated that the proportion of pregnant women who attend at least four ANC visits during the course of their

pregnancy is still low at 60% and only 73% of the deliveries happen at the health facility (UBOS & ICF, 2017). Some studies have shown that the more pregnant women attend ANC the more likely they will have a skilled birth attendance or health facility delivery and good health outcomes (Seung-Ah et al., 2016). It is thus not surprising that Uganda still has a high maternal mortality rate, given the low ANC attendance and health facility deliveries.

In 2001, a WHO study evaluated and recommended focus antenatal care (FANC) – an approach that promotes four antenatal visits that are goal oriented and personalized with guidance on the services a pregnant woman should receive when they interface with a health care worker (Villar et al., 2001) . The rationale for FANC is that a pregnant woman gets an opportunity to receive a total package of services that ensures she experiences a normal pregnancy and safe delivery. The package of services includes; identification of pre-existing health conditions, early detection of complications arising during the pregnancy, health promotion, disease prevention, birth preparedness and complication readiness planning (Villar et al., 2001).

The implementation of FANC moves away from the notion of a number of visits and focuses on the content of the services a pregnant woman receives per ANC visit made. The quality of services (and not just number of visits) plays a significant role in ensuring good health outcomes of the pregnancy (Hodgins & D'Agostino, 2014). In Tanzania, a review of the mother's records showed that some of the services a woman ought to have received during the visit were not offered and the maternal death audit estimated the cost of the substandard ANC to lead to 20% of the deaths, re-affirming the critical role of quality ANC in reducing maternal deaths (Nyamtema et al., 2012).

Many countries including Uganda have adopted the WHO recommendation with varying degrees of implementation. A multi-country study involving Uganda, Tanzania and Burkina Faso, demonstrated variation in implementation of FANC across the study health facilities mainly due to lack of essential logistics and supplies required to perform the specified procedures (Conrad et al., 2012). Although the study assessed availability of logistics, there was no engagement of the health providers to understand their perspective of the factors that influenced the performance or non-performance of the different procedures.

In a multi-country study conducted in Kenya, Ghana and South Africa, the quality of ANC services measured from the perspective of both the health care providers and the pregnant women found that FANC implementing sites out performed control sites with the difference attributed to inadequate human resources and supervision in the control sites (Birungi, 2008).

In Uganda, Bbaale (2011) reported that only a few pregnant women receive the full content of the ANC package with disparities across both government and non-government health facilities. Indeed, the quality of ANC is affected by the critical shortage of trained staff and other resources essential to deliver appropriate care and services to the pregnant women. Thus, in resource limited settings, the quality of antenatal care services significantly depends on how well the health facilities implement FANC as well as the factors that influence the implementation of FANC.

1.2 Problem Statement

Uganda adopted the WHO guidelines for FANC in 2003. Studies in Uganda and elsewhere have demonstrated challenges with the provision of the components of the FANC package due to inadequate logistics and a shortage of supplies (Baker et al., 2015; Bbaale, 2011). A pregnant woman's chance of getting all the components of the ANC package increases with the number of visits they make to the health facility (Bbaale, 2011). However, in Uganda the proportion of pregnant women utilizing comprehensive ANC services is low based on the reported number of women attending four ANC visits during the last five years (MoH, 2014).

The Ugandan Ministry of Health recommends that if a pregnant woman comes after the first trimester, they should receive all recommended components of the FANC package that should have been received during the pregnancy period (MoH, 2012). Until recently, antenatal registers did not provide longitudinal data making it difficult to get reliable data on the services a pregnant woman receives. Therefore, most studies on ANC have been based on surveys to inform the number of times a particular woman attended ANC (Bbaale, 2011; Majrooh et., al 2014).

The implementation of the FANC approach may require that health facilities organize service delivery during the ANC visits, such that every pregnant woman is provided with services

according to guidelines. This therefore necessitates health facilities to have mechanisms in place that check whether every pregnant woman receives some or all the components of ANC during the visit as per recommendations to be able to appropriately respond. The level of organisation of ANC services may depend on several factors including, the level of health facility, number of staff, geographic and leadership. Consequently, correct implementation of FANC increases a pregnant woman's chance of identifying and addressing risks related to the pregnancy as well as receiving appropriate services to ensure healthy outcomes for the mother and baby. In a study to ascertain satisfaction of FANC, it was reported that geographical location of the health facility influenced pregnant women's level of satisfaction of FANC services (Chemir, Alemseged, & Workneh, 2014). Another study reported variation in how health facilities comply with FANC guidelines in rural Uganda, Tanzania and Bukina Faso (Conrad et al., 2012). Both these studies focused on randomly selected health facilities without consideration of representation of the health system that provides ANC services. In Uganda, the recommended FANC package of services is expected to be the same regardless of the level of health facilities (MoH, 2012). The current study assessed the implementation of FANC in health facilities at level II, III and IV – representing the health system in efforts to document how well FANC is implemented as well as determine the implementation barriers and facilitating factors as perceived by the health workers.

1.3 Study Aim

The aim of the study was to assess implementation of FANC at the health centers (levels II, III and IV of the health system) and the associated barriers and facilitating factors in Jinja district.

1.4 Objectives

1. To assess implementation of FANC at health centres level II, III and IV
2. To determine health provider perspectives of barriers and facilitating factors of implementation of FANC

CHAPTER TWO: LITERATURE REVIEW

In the previous chapter, the study purpose, rationale and objectives were listed in relation to determining the level of focused antenatal care (FANC) implementation at the different levels of the health system. This chapter will discuss the implementation of FANC in Uganda and elsewhere in the world including information on the following topics; FANC in Uganda, quality of FANC, implementation of FANC guidelines, barriers and facilitating factors of FANC and link between antenatal care and health facility deliveries.

2.1 Focused Antenatal care in Uganda

In 2003, Uganda adopted the WHO guidelines that recommend the use of focused antenatal care (FANC) approach – which stipulates services/interventions a pregnant woman (who has no specific risk factors that require frequent visits) should receive during each of the four recommended visits to the health provider (Lincetto et al, 2006). The Ugandan clinical guidelines incorporated FANC protocols stipulating the recommended timing as well as the goals of the four antenatal visits as shown in the *Table 2.1* below (MoH, 2012).

Table 2.1: Goal of each of the recommended four ANC visits

Visit number	Weeks of pregnancy	Goals of the visit
First visits	10-20	• Risk assessment • Health education • Plan for delivery
Second visits	20-28	• Take action if laboratory results are abnormal • Ensure tetanus toxoid vaccination • Exclude multiple pregnancy • Assess for signs of pregnancy induced hypertension • Exclude anaemia • Check for foetal growth
Third visits	28-36	• Check foetal growth • Exclude anaemia • Assess sings of pregnancy induced hypertension • History taking and laboratory investigations • Same as for second visit
Fourth visit	>36	• As of third visit • Exclude abnormal presentation

According to a study comparing FANC to the old model of ANC service delivery, the FANC approach is economical to the pregnant mother since she makes fewer visits. However, there

were no other significant differences in the outcomes for the mother and baby (Villar et al., 2001). This study was key in promoting FANC as an approach that promotes use of evidence-based interventions to improve quality of antenatal care (ANC) services without making many visits to the heath facility.

In Uganda, demand related factors play a significant role in the implementation of FANC in view of the low proportion of pregnant women who make at least four visits during the course of their pregnancy (UBOS & ICF, 2017). Previous Uganda Demographic Health Survey in 2011 showed that only 21% of pregnant women attend their first ANC visit before the fourth month of pregnancy while 44% attend their first visit between fourth and fifth months (UBOS and ICF International Inc., 2012). Consequently, a significant number of pregnant women who attend their first (and probably only) ANC visit late in the second trimester are likely to miss critical interventions.

Several studies have explored factors for low ANC attendance specifically in developing countries like Uganda and reported that both demand and supply related factors influence a pregnant mother's decision to attend in varied measures (Banke-Thomas, Banke-Thomas, & Ameh, 2017). In a multi-country study on factors affecting antenatal attendance, it was found that women often started antenatal care late, did not understand the procedures offered during ANC, and their attendance was influenced by the circumstances surrounding the pregnancy and how the health providers responded to their concerns (Pell et al., 2013).

Similarly Banda, Michelo & Hazemba (2012) and Gebremeskel et al. (2015) found that knowledge on the importance of ANC and planned pregnancy influenced timing of ANC attendance in Zambia and Ethiopia respectively. The implication of these findings is that fewer pregnant women make the recommended visits and thus the majority are not likely to benefit from the FANC approach. The Ugandan guidelines thus recommend that if a pregnant woman makes their first visit after the first trimester, the health worker should ensure they provide all interventions the woman should have received by their pregnancy age (MoH, 2012). This practice would however require great organisational skills at the health facility to identify the services that every pregnant woman needs and ensure that they receive the appropriate services. Often reports on antenatal care attendance in Uganda focus on the number of visits a pregnant woman makes during the course of the pregnancy with the

assumption that she receives all prescribed services. Limited information is available on the personalised care in preparation for child birth by healthcare providers during ANC visits.

2. 2 Quality of focused antenatal care

The WHO definition of quality of care is cited in (Tunçalp et al., 2015, p. 1046) as '*the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred.'*

In the context of FANC, quality would therefore be defined by the processes of care that ensures that every pregnant woman who attends ANC services receives what is recommended for the visit as well as addresses her needs. The quality of ANC services has been under a lot of scrutiny and often blamed for low subsequent ANC attendance by the pregnant women and health facility deliveries. Previous studies have measured quality of FANC by the number of components of the ANC package a pregnant woman receives, namely; urine sample, blood sample, blood pressure, iron tablets, tetanus shots, measurement of weight and advice about danger signs of pregnancy using data from demographic health surveys (Agha et al., 2016; Bbaale, 2011).

Other studies have described quality in terms of the availability of the key tests and actual provision of the service to the pregnant women during ANC visits (Baker et al., 2015; Kiwuwa & Mufubenga, 2008). Tetui et al. (2012), Bucher et al. (2015) and Kyei, Chansa & Gabrysch (2012) used an index to rate antenatal services as either poor, fair or good depending on the number of services provided under each category of history taking, examination, laboratory, treatment and health care provider action. While the studies selected different items of the components of ANC services they considered key, the outcome measure focused on the pregnant woman's access to services that facilitate good health for both mother and baby.

All the above mentioned studies measured the quality of antenatal care services with a focus on the minimum recommended prenatal interventions for the pregnant women by the healthcare provider. These measurements however do not necessarily reflect whether the

FANC interventions were implemented as per the protocol. Most importantly, the studies reported inadequate quality of ANC services for the pregnant women.

A study examining quality of prenatal counselling on danger signs in rural Tanzania showed that a significant number of pregnant women who went for ANC were not informed about the danger signs and compared to waiting times, less time was spent on interaction between the client and the health provider (Pembe et al., 2010). Similarly, in Eastern Uganda, assessment of the process of providing ANC services showed that health care providers performed clinical examination well for most of the pregnant women, however counselling for risk factors was poorly done (Tetui et al., 2012). These two studies involved observation of the services being provided to pregnant women by health care providers although it was not clear if the observations were based on the services a pregnant woman should get based on their gestation age as per the FANC protocols.

Quality of ANC services is affected by factors related to the health worker, the pregnant woman and systems and processes of care at health facilities that deliver ANC services. In their study to identify implementation challenges in the effective coverage of essential screening tests in the ANC package, such as Syphillis, HIV and Anaemia, , Baker et al. (2015) reported that although many pregnant women attended ANC at least once, health facilities were usually short of logistics to provide the essential tests.. The multi-country study also reported other reasons for mothers not receiving tests during ANC such as; heavy work load for the health workers, lack of health worker knowledge, long waiting times, pregnant mothers coming late for antenatal care and sometimes pregnant mothers refusing testing. Similarly, in another study conducted in Tanzania, quality of FANC was affected by lack of trained staff, absenteeism, non-adherence to FANC guidelines and limited logistics (Schellenberg et al., 2011).

Studies on implementation of FANC indicate that the time factor is important in provision of quality services to the pregnant women. In Kenya, although the introduction of FANC was reported to be accepted by both clients and health care providers, there were observations of increased waiting time attributed to facilities' failure to organize their processes of care to accommodate implementation of FANC protocols (Birungi, 2008). In line with these findings, another study reported that implementation of FANC required more time which

translates into the need for more health workers to provide quality services (von Both et al., 2006). On the contrary, Conrad et al., (2012) found that the actual time spent providing FANC is less than the recommended time by WHO; therefore may not necessarily require more health workers to be implemented.

2.4 Implementation of FANC guidelines

The Ministry of Health in Uganda developed guidelines to support the implementation of FANC in the country (MoH, 2012). The purpose of guidelines such as the FANC protocols is to streamline processes of care and recommend to health care providers the activities they ought to implement when they interact with a pregnant woman. Despite the development and availability of guidelines, implementation may face challenges including lack of resources such as medicines, human resources, limited reading culture, no prior training on the use of guidelines among many other factors (Nabyonga Orem et al., 2012).

A multi-national study conducted in Bukina Faso, Ghana and Tanzania to explore the use of clinical guidelines to improve quality of maternal services found that despite trainings on use of the guidelines, health care providers often continued with their usual practices due to factors such as negative perceptions of the guidelines and the non-user-friendly format (Baker et al., 2006). This study highlighted the need to engage health care providers beyond training them to support the utilisation of clinical guidelines to improve quality of ANC services.

Schellenberg et al. (2011) while studying performance of health care providers in provision of ANC services found that often the client held ANC card worked as a guideline of services a pregnant woman should receive but also care practices were influenced by the health facility routines. This implies that, for a given visit by a pregnant woman to the health facility, the likelihood of missing out interventions not shown on the care card are high. Clinical guidelines need to be user-friendly and incorporated in existing daily routines to improve their usability by the health care providers.

In a study to measure compliance to clinical guidelines, an increase and sustained use of guidelines for over a two year period was reported when health care providers were supported to set up implementation teams, trained and provided with regular feedback (Forsner et al.,

2010). Furthermore, Nabyonga Orem et al. (2012) recommends that mechanisms to evaluate implementation of guidelines should be put in place to inform if set targets have been achieved or not and identify gaps that need to be addressed to improve implementation.
The previous findings from the different countries including Uganda demonstrate that the use of guidelines is limited and thus inadequate performance in implementation of FANC may be related to this factor (Amoakoh-Coleman et al., 2016; Baker et al., 2006).

2.5 Barriers and facilitating factors of FANC implementation

As alluded to earlier, there are a number of factors that have been associated with poor or adequate implementation of FANC protocols. When policy changes are effected such as model of delivery of ANC services, health workers need in-service training to build their capacity to implement the changes (Ploeg et al., 2017). A study on effect of training on implementation of FANC at two health facilities in Kenya over a period of two years found improvement in delivery of some components of ANC (Ouma et al., 2010).

However, training on its own has not been found to be effective. Supervision of ANC service providers gives an opportunity to identify critical implementation gaps and provide contextual solutions to improve service delivery (Villadsen et al., 2015). In addition to supervision, availability of tools for health care providers to use as a reminder of the interventions they need to provide to a pregnant woman during sessions of personalised care is key. Job aids were found to improve quality of counselling by the health care providers as well as help pregnant mothers improve their knowledge of vital prenatal information (Jennings et al., 2010a).

Inadequacy in resources required to implement FANC has been reported in many studies as a factor that greatly influences whether a pregnant woman gets recommended interventions during her visit with a health care provider (Rassi et al., 2016; Singh, 2016). In Tanzania, a study to determine the performance of health care workers in the provision of ANC services found that absenteeism, lack of training coupled with lack of resources influenced interventions a pregnant woman received during ANC visits (Schellenberg et al., 2011) .

A large study in six low and middle income countries (LMIC) found quality gaps in provision of ANC components. Under the investigations component, 50% of the pregnant women received syphilis and haemoglobin estimation tests while over 91% received HIV testing, 94% got prenatal vitamins, 88% got tetanus toxoid vaccination (Bucher et al., 2015). This study further showed that over 9% of pregnant women received prenatal vitamins, tetanus toxoid vaccination and weight measurements. Although these average scores painted a great picture, there were differences between countries related to prioritisation of the country and availability of resources to implement.

In a study to understand the relationship between resource availability and compliance with guidelines, adherence to the guidelines varied across health facilities despite availability of resources to implement required interventions in public health facilities (Amoakoh-Coleman et al., 2016). This implies that whereas limited resources may be a factor in influencing how FANC is implemented, other factors may influence whether every pregnant woman receives the appropriate interventions as per the guidelines.

In Ethiopia, a study on quality of ANC care services found that private health facilities out performed government health facilities on FANC (Bayou, Mashalla, & Thupayagale-Tshweneagae, 2016). However, another study comparing ANC service delivery in public and private health facilities in rural china found that public health facilities outperformed the private health facilities. In both these studies, it was reported that the quality of ANC was suboptimal given that a limited number of the pregnant women received the services they ought to have received as per the guidelines. This implies that differences in the implementation of FANC across health facilities occurs and may be related to other prevailing factors.

2.3 Antenatal care and health facility delivery

Several studies on the benefits of antenatal attendance and the pregnancy outcomes have reported positive associations especially when the pregnant woman attends more sessions (Pervin et al., 2012; Tsegay et al., 2013). A multi-country study conducted in 28 African countries to explore the association between antenatal care attendance and skilled birth attendance found that 66% of women who attended antenatal care had a skilled birth

attendance; and among women who received ANC components such as blood pressure check, blood tests and danger signs information the odds were higher (Chukwuma et al., 2017) .
Similar studies done using demographic health survey (DHS) data in Uganda and Pakistan demonstrated that the more components of ANC package a pregnant woman received the more likely she was to have a health facility delivery (Agha et al., 2016; Bbaale, 2011). The studies further demonstrated that with more antenatal care visits, a pregnant woman's chances of receiving more components of ANC package increase. Together these studies point to a need to correctly implement FANC in order to increase the number of women delivering at health facilities under support of a skilled birth attendant thereby reducing the risk of maternal mortality.

Although health facility delivery is predictive of maternal mortality, the quality of ANC is also linked with health facility delivery(Hanson et al., 2015). A study comparing implementation of the two models of ANC reported significant foetal mortality between weeks 32-36 of gestation for women attending FANC compared to standard ANC care and suggested quality of ANC may have a lot to do with the outcomes (Vogel, et al, 2013). Therefore, given that these studies define quality based on the number of components of ANC package provided, it is important to note that the outcomes of pregnancy hinge on the quality of services provided to identify risk factors and mitigate them.

In countries like Uganda where FANC is being implemented, quality ANC means following the nationally adopted guidelines and providing appropriate services for each pregnant woman. This study discussed quality of antenatal care from the perspective of providing appropriate services for each pregnant woman in the different health facilities across the health care system. Further, barriers and factors facilitating the implementation of FANC were explored.

CHAPTER THREE: METHODOLOGY

In the previous chapter literature on FANC implementation was reviewed to understand what is already known about FANC implementation including facilitators and barriers to implementation. This chapter describes the methodology used to answer the research question including; the study design, setting and sampling procedure. Details on how data management was conducted are also provided.

3.1 Study Design

This was a descriptive cross-sectional study design with multiple quantitative methods including observations, structured questionnaires, and record reviews to collect a single round of data on FANC implementation at the selected health facilities.

In this study, we set out to assess implementation of FANC and determine associated barriers and facilitating factors. A cross-sectional design was appropriate because it is used to determine prevalence of a health issue and relationship between variables under study. This study design was also the most feasible and logistically appropriate to implement in a short period of time with adequate data collection to answer the research questions (Chatzi. & Kogevinas., 2009).

3.2 Study setting

Jinja district is located 80 km from Kampala (capital city) in the eastern part of Uganda with an estimated population of 514,300 people. Eighty percent of Jinja town's population is rural with major economic activities as tourism, farming and fishing. Jinja has five health sub-districts managing 54 public and 20 private health facilities. Available district statistics estimated just over 25,000 pregnant women in 2013 while four ANC visits coverage was 37% (Jinja District Health Services, 2014). The study was conducted in nine randomly selected health facilities that provide antenatal care services in Jinja district.

3.3 Study Population

The study population was pregnant women who attended ANC services and health care providers of ANC services at selected health facilities in Jinja district. For appropriate representation, health facilities were randomly selected to access the study population. The study utilized multi-stage sampling procedures to select the health facilities and eligible pregnant women in the randomly selected health facilities. Sampling procedures and participant inclusion and exclusion criteria are discussed in the next sections.

3.4. Sample Size Computation

The study took into consideration a number of variables in sample size computation such as; ANC attendance, the reasonableness in measuring the variables of interest, the potential to use the sample to explore differences between facility types as well as the level of precision required for the survey estimates. The sample size was determined using the formula for the calculation of sample size in populations (*see equation 3.1 below*).

Equation 3.1: Sample size calculation

$$\text{Sample Size (N)} = \frac{Z_{1-\alpha/2^2}\, p(1-p)}{d^2}$$

Where N = calculated sample size; z = standard normal deviate at 95% confidence interval = 1.96; P = proportion of women who attend antenatal at least once; q = the complementary probability of P (1 - p) that is, percentage of women not attending antenatal visits and Alpha error: 5%. It is estimated that about 93% of pregnant women attend their ANC visit at least once (UNICEF 2013). It therefore follows that, the estimated minimum sample size required for the study is 107 women. Adjusting the sample for a non-response rate estimated at 5% leads to a sample of 112 women. Although 112 pregnant women were approached for observation, only 108 participants accepted to take part in the observation of antenatal care service delivery.

For the health workers, the study purposively selected at least 2 midwives who were involved in provision of ANC services at the study site on the data collection day. At HC II with only

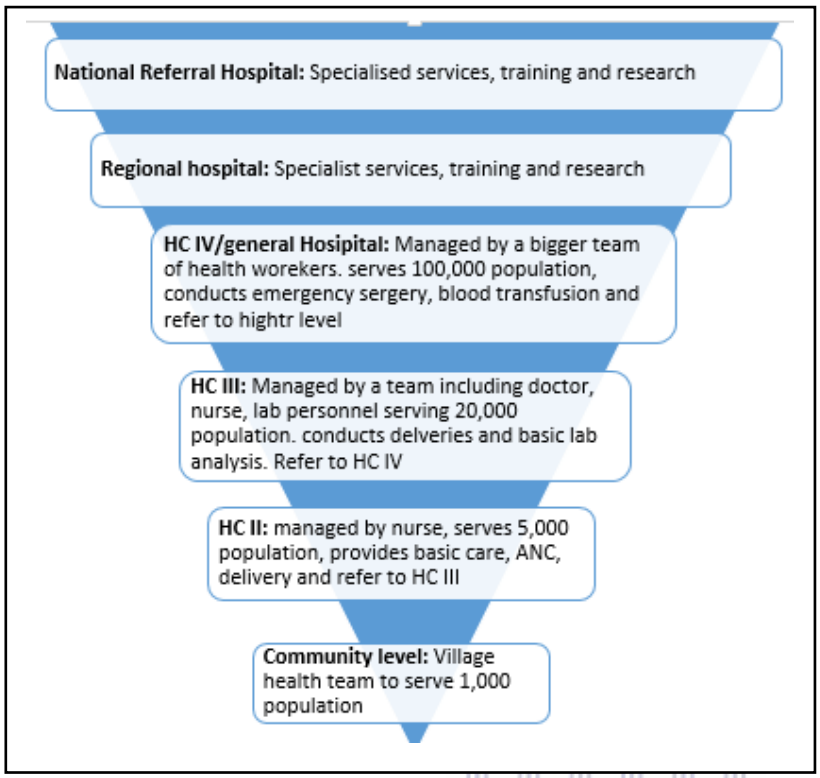
one midwife – only one was interviewed. The study assumed that two health workers were sufficient to represent the perceived barriers and facilitating factors of FANC implementation for each health facility. The perspectives of the health workers were an important part of the study because they provided insight from the service provider's perspective on what factors influence FANC implementation.

3.5. Sampling procedure

3.5.1. Site selection

To provide insights into how FANC is implemented in Jinja district, health facilities across the health care system were included in the study. While Jinja has 74 health facilities, only 67 reported to the district health information system (DHIS2) for eight months' period (January to August 2016) before writing the study proposal. Further, some health facilities were identified as providing care to a limited number of pregnant women per month and these were excluded. This study considered 27 health facilities (level IV, III and II) that provided ANC services with an average of 20 women per month excluding the hospitals. Hospitals were excluded from the study due to the nature of organization of antenatal care services that are quite distinct from the other levels of health facilities (*see Figure 3.1 for details on Uganda's health system*). To get a proportional number of health facilities across the three levels, nine (9) health facilities were randomly selected using the list of the 27 health facilities to participate in the study. The data collection included observations of ANC health services. The study hypothesized that there would not be much difference in the services the health care providers provided to the pregnant women at a specific health facility and as such it was decided to observe a minimum number of pregnant women in each of the trimesters to check the services they received.

Figure 3.1: Uganda's Health System

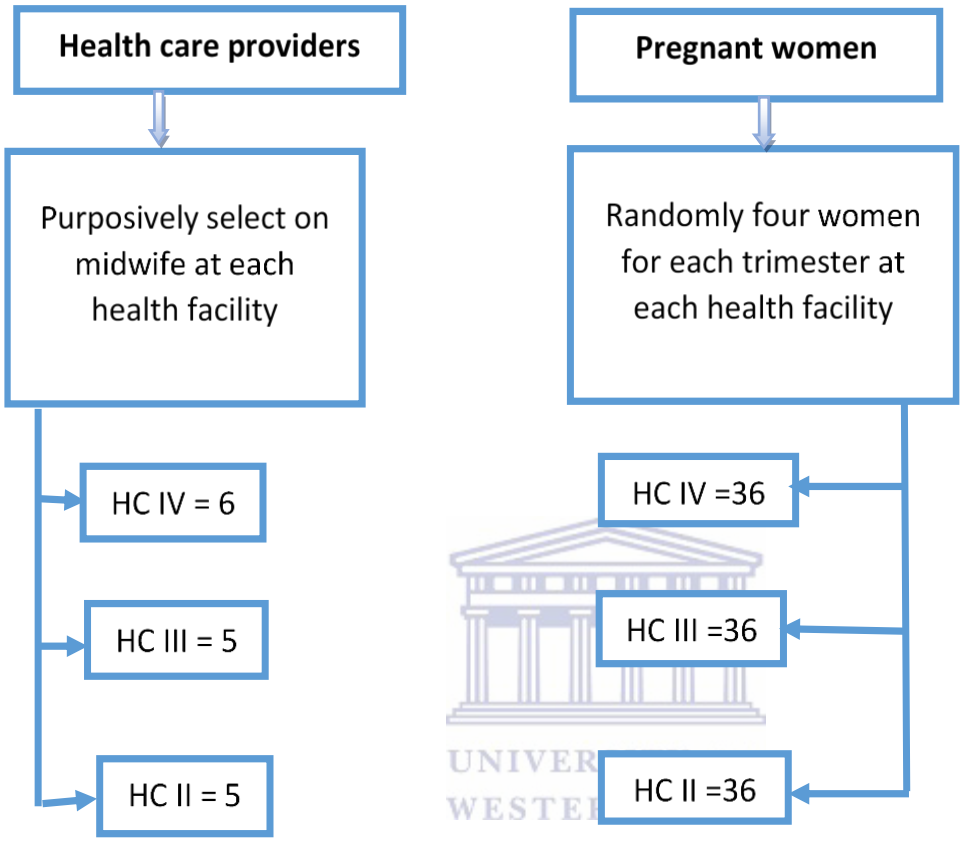


3.5.2. Study participant selection

The study had two categories of participants; 1) health care providers and 2) pregnant women. The sample of pregnant women was stratified by trimesters in equal proportions. At the study sites, daily attendance registers were used to randomly select 12 pregnant women; four belonging to each of the 3 trimesters for observation during the course of ANC service delivery in each of the 9 facilities as shown in figure 3.2.

Purposive sampling was used to select at least one midwife at the study site. This method of sampling was preferred so as to include FANC insights by the front line health care providers for ANC at the selected health facility in context with the study objectives.

Figure 3.2: Study participants selection



3.6. Inclusion and exclusion criteria

The study inclusion criteria for pregnant women were; woman registered for ANC on the day of study, at least 18 years of age and a resident of Jinja. Pregnant women who were too ill and those whose ANC visit was not categorized as routine were excluded from the study. The eligible pregnant women were followed throughout their consultation with the health provider to observe and document services received. The inclusion criteria for the health care providers interviewed were that; provider worked with the antenatal care services at the selected health facility and provided antenatal care services on the day of the study. Students and interns were excluded.

3.4 Data Collection

Identification and training of data collectors: Four practicing midwives from Jinja were trained as data collectors and assigned to collect data at health facilities where they do not work. A one day's training was conducted for the four data collectors to introduce them to the tools and comment on their usability. During the training, data collectors went through all the questions in the tool to be sure that they understood them, whenever necessary questions were raised and answered and clarifications made. Data collectors were asked to check the data collection forms for completeness before submission.

Piloting the data tools: A non-study site was selected to pilot the tools. This process was conducted by the data collectors and their supervisor; feedback was provided on the need to improve the tool. Changes were made on the health care provider interview tool to ensure questions were clear. A final revised version of the tool was used for data collection.

To understand implementation of FANC, an observation check list was used to document health promotion information the eligible participant received during her clinic visit and specific services she received from the health care provider. Observations focused on five components of ANC; history taking, examination, investigations, health promotion activities, actions taken by a health care provider during the visit. During the observations, the data collector completed the check list with a tick if the health care provider completed the required task or a cross if it was not performed. The data collectors also reviewed the pregnant mother's antenatal care card to triangulate information about the mother. For the scope of this study, data was collected on whether an intervention was performed or not. However, details on how well an intervention was performed were beyond the scope of this study.

As key informants, identified ANC health care providers at the selected health facilities were also asked about their general knowledge of FANC. To determine the barriers and facilitating factors to FANC implementation, the health care providers were asked to select what was applicable to their context from the list of pre-selected themes informed by previous literature and developed into a questionnaire.

3.5 Validity and Reliability

Validity of an instrument is defined as the extent to which the instrument measures what it intends to measure (Biddix, n.d.). In this study, because we aimed to measure implementation of FANC, tools used were based on the Uganda clinical guidelines (2012) for FANC to determine delivery of services for pregnant women at each visit at the health facility. The designed tools were piloted for feasibility to ensure they provided the data required for the study. To reduce variability, data collectors were trained on data collection protocols and supervised to observe any issues that needed to be addressed.

3.6 Data analysis

Data entry and analysis were done using STATA version 10 statistical software package. In the pre-analysis phase, data collection tools were reviewed for completeness of all information including unique identification and variable specific data for each of the questions asked. The data were entered into a database, inspected for any irregularities and cleaned. To measure level of implementation for each of the five components of antenatal care services, each intervention expected to be performed as per the FANC guidelines was considered and provided the same weight. In the analysis, a composite indicator was developed to measure if interventions under each component were performed at each of the three health facility levels. First; we took a count of interventions that scored; 1) more than 80% 2) less than 80% and more than 60% and 3) less than 60%. The proportion of performance from step one for each level of health facility under each component were used to determine level of performance as; 1) Good if greater than 80%, 2) fair if less than 80% and more than 60% and poor if less than 60%. These scores were then used to determine the performance of each of the components using the scale. To analyze the facilitators and barriers to implementation of FANC, responses from health care providers to structured questionnaires were enumerated and reported.

3.7 Ethics Considerations

The study received ethics approval from the University of the Western Cape (BM/16/5/53) and the Mildmay Uganda Research Ethics Committee (REC REF 0401-2017). This study

involved collecting data from human subjects and as such efforts were made to ensure study participants' privacy was maintained and confidentiality of their information assured through use of unique identifiers on all the data collection tools of the participant. Only the data collectors had access to the original list of the participant names for reference purposes and this list was destroyed once data collection was complete. The data collector reassured the eligible study participants of maintaining anonymity and confidentiality of the information collected. Informed consent was obtained from all study participants observed and interviewed. To minimize disruption to scheduled patient care, the data collectors observed and did not interrupt service delivery.

CHAPTER FOUR: RESULTS

This chapter presents the findings of the study focusing on implementation of the five components of antenatal care services as well as perspectives of the health providers on FANC. The five components of antenatal care studied include; history taking, examination, investigations, health promotion activities, actions taken by health workers during ANC service provision.

4.1 Characteristics of respondents

Displayed in Table 4.1 are the characteristics of health care providers from the study sites who were interviewed on their perspectives of FANC. The assessment was conducted among six health care providers from HC II (37%) and five health care providers from HC IV and HC III equivalent to 31% each. Most of the study sites were government owned facilities (88%).

Health care provider education was captured because it was hypothesized to influence their practices in clinical care. A high proportion (75%) of health care providers had a certificate in midwifery as their highest education attainment compared to only 19% with diplomas.

A significant proportion of providers were employed on a permanent basis (94%) with only 6% acting under temporary employment. Over 64% of health care providers had worked on a permanent post at the study sites between one year and 10 years.

This study did not find it necessary to include characteristics of the pregnant women observed at the selected health facilities as these would not directly relate to the objectives of the study.

Table 4.1: Characteristics of health workers in nine health facilities in Jinja District, N=16

Variable	**n (%)**
Health facility level	
HCIV	5 (31)
HCIII	5 (31)
HCII	6 (37)
Type of health facility	
Government	14 (88)
Private	2 (12)
Highest level of education	
Certificate	12 (75)
Diploma	3 (19)
Post graduate	1 (6)
Employment status	
Permanent	15 (94)
Temporary	1 (6)
Years of providing ANC	
1 to 5 years	5 (31)
6 to 10 years	5 (31)
11 to 15 years	1 (6)
>16 years	5 (31)
If facility implements FANC	
Yes	16 (100)
Rate knowledge of FANC	
Good	13 (81)
Fair	3 (19)
Poor	0 (0)
Formal training on FANC	
Yes	9 (56)
No	7 (44)

According to the health care providers, all the nine study sites implement FANC and 81% rated themselves as having a good knowledge of FANC. Nine (56%) of the health care providers reported they had received formal training on FANC.

4.2 History taking for pregnant mothers

History taking was observed among 108 study participants to find out if health care providers assessed information on the following aspects; medical, surgical, obstetric, gestation period,

contraceptive use, sexually transmitted infections, smoking/drug abuse, foetal movement and antepartum haemorrhage (APH) depending on the relevance to the pregnant mother's gestation age. However, not all study participants were eligible for each of the interventions based on their gestation age. The observation results displayed in Table 4.2 apply to study participants whose history taking was relevant.

Table 4.2: History taking for the pregnant women

Took history on;	**HC IV**	**HC III**	**HC II**	**Total**
	n (%)	**n (%)**	**n (%)**	
Medical	13 (100)	11 (100)	9 (75)	33
Surgical	13 (100)	11 (100)	11 (91)	35
Obstetric	13 (100)	11 (100)	12 (100)	36
Confirm period of gestation	12 (92)	10 (90)	12 (100)	34
Last Menstrual Period	13 (100)	11 (100)	12 (100)	36
Contraceptive use	7 (54)	6 (55)	1 (8)	14
Sexually transmitted infection	10 (77)	6 (55)	8 (67)	24
Smoking alcohol/drugs use	10 (77)	8 (73)	1 (8)	19
Ask for problems	24 (100)	24 (100)	24 (100)	73
Date of 1st foetal movements	7 (58)	7 (58)	4 (33)	18
Antepartum Hemorrhage	1 (5)	1 (5)	1 (6)	3

Overall, history taking on all conditions was lowest in HC II and highest in HC III followed by HC IV. This is probably attributed to the level of provider skills set at HC II compared to HCIII and HC IV. History taking on obstetric conditions, last menstrual period, asking for problems was most observed across all levels of study sites (100%). Taking surgical history was observed on all mothers in HC III and HC IV (100%). Antepartum hemorrhage history taking and contraceptive use were least observed (<60%) followed by history taking on STIs and drug use.

4.3 Examination of mothers at the study sites

During the study, we observed providers examine mothers during clinical practice. We observed examination of weight, height, blood pressure, eye/palm for anaemia, oedema,

syphindo-fundal height, vulval exam, abdominal exam, feotal heart sound, multiple pregnancy, feotal lie and presentation. Each of the variables was scored as observed or not observed as applicable to the pregnant mother's gestation age.

Results in Table 4.3 show that providers mostly examined the positioning and presentation of the foetus in all study sites (100%). They also examined for weight, blood pressure and abdomen in all HC IIIs (100%). Vulva examination was least done across all facilities, followed by measurement of height, and procedures to rule out multiple pregnancies. Other examinations were conducted to more than half of the pregnant mothers. Overall, on review of the findings, examinations did not differ significantly by facility type as shown in table 4.3.

Table 4.3: Examination by providers in the study sites

Examination on;	HC IV	HC III	HC II	Total
	n (%)	n (%)	n (%)	
Weight	32 (86)	35 (100)	23 (64)	90
Height	3 (23)	3 (33)	1(8)	7
Blood pressure	25 (69)	35 (100)	31 (86)	91
Eye/palm for anaemia	36 (97)	27 (77)	34 (94)	97
Oedema	30 (81)	25 (71)	24 (67)	79
Syphindo-Fundal Height	36 (97)	34 (97)	36 (100)	106
Vulval exam	1 (7)	2 (18)	0 (0)	3
Abdominal exam	11 (85)	11 (100)	12 (100)	34
Feotal heart sound	27 (73)	26 (74)	28 (78)	81
Rule out multiple pregnancy	7 (58)	2 (16)	2 (16)	11
Check feotal lie	5 (100)	6 (100)	6 (100)	17
Check presentation	5 (100)	6 (100)	6 (100)	17

4.4 Investigation performed on mothers

Further observations were made to identify the kind of investigations performed to the pregnant mother so as to assess for the appropriateness of services offered at ANC. Among the investigations observed were; the Syphilis test, urine-albumen, urine–glucose, routine counselling and testing for HIV (RCT), Heamoglobin (HB) and blood group. The findings displayed in table 4.4 revealed limited investigations on all aspects in HC IIs except RCT (50%). Syphilis, urine and HB tests were predominating investigations in HC IV (100%).

Generally, providers mostly conducted investigations in HC IVs than any other level facilities under the study.

Table 4.4: Investigation by providers in the study sites

	HC IV	HC III	HC II	Total
Investigation	n (%)	n (%)	n (%)	
Syphilis test	13 (100)	8 (67)	1 (8)	22
Urine-albumen	17 (53)	4 (12)	1 (3)	22
Urine – glucose	13 (100)	4 (31)	0 (0)	17
Routine HIV counseling and testing	25 (76)	15 (43)	18 (50)	58
Heamoglobin	13 (100)	0 (0)	0 (0)	13
Blood group	11 (85)	0 (0)	0 (0)	11

4.5. Health promotion activities in the study sites

Health education and communication is an important component in health care and behavioral change. In the study, we observed for any health education appropriate to the pregnant mother's trimester and condition. The assessment on health education included; addressing any problem, involving husband in ANC, drawing up delivery plan, future contraceptive use, condom use, miscarriage & pregnancy induced hypertension (PIH), prevention of mother to child transmission of HIV (PMTCT) & Routine counselling and testing (RCT), nutrition & hygiene, breast feeding, insecticide treated net (ITN) use, danger Signs, discussing Laboratory results and need to treat partner, discussing labour/ early rapture of membranes (EROM), Pap smear as well as sex and postpartum care. As shown in table 4.5, messages on addressing any problem the pregnant mother presented with and on miscarriage and pregnancy induced hypertension were most discussed (>90%) across all health facilities. Information on nutrition and hygiene was provided to 62% of pregnant mothers across HC IV and HC III. Messages on future contraceptive use and antepartum hemorrhage (APH) were least provided (<20%) to the pregnant mothers.

PMTCT & RCT were discussed mostly (84%) in HC IV followed by HC III (49%) but least discussed at HC II (28%). Discussion on danger signs was poor across the health facility levels 30% at HC IV, 9% at HC III and 6% at HC II. However, discussions on early rapture of membranes and use of insecticide mosquito nets was higher at HC II compared to HC IV and HC III.

Table 4.5: Health promotion to pregnant mothers during ANC

	HC IV	HC III	HC II	Total
Health promotion	n (%)	n (%)	n (%)	
Address any problem	35 (95)	34 (97)	35 (100)	104
Involve husband in ANC	1 (8)	0 (0)	6 (50)	7
Draw up delivery plan	5 (21)	9 (39)	9 (47)	23
Future contraceptive use	0 (0)	0 (0)	2 (16)	2
miscarriage & PIH	12 (100)	11 (100)	12 (100)	35
PMTCT & RCT	31 (84)	17 (49)	10 (28)	58
Nutrition & hygiene	8 (62)	8 (62)	1 (8)	17
Breast feeding/Infant	4 (20)	1 (8)	1 (8)	6
ITN use	13 (35)	11 (31)	19 (53)	43
Danger Signs	11 (30)	3 (9)	2 (6)	16
Discuss Laboratory results and need to treat partner	5 (42)	2 (17)	2 (17)	9
Check PIH	3 (25)	5 (42)	5 (42)	13
APH	2 (11)	1 (6)	0 (0)	3
Discuss labour/EROM	2 (16)	5 (42)	5 (56)	12
Re-discuss family planning	7 (19)	4 (11)	5 (14)	16
Sex and Postpartum Care	11 (30)	9 (26)	11 (31)	31
Pap Smear	5 (14)	7 (20)	9 (25)	21

4.6 Actions taken by providers

Actions taken by the health care providers in relation to providing medication during their interactions with the pregnant women were also observed in the study (Table 4.6). Among those observed were; administration of intermittent preventive treatment of malaria (IPT) dose, tetanus toxoid (TT) vaccine, Ferrous Sulphate, Folic acid, treatment of incidental ailments, dual protection against HIV, debriefing mother, and Mebendazole.

Table 4.6: Actions taken by providers in the study sites

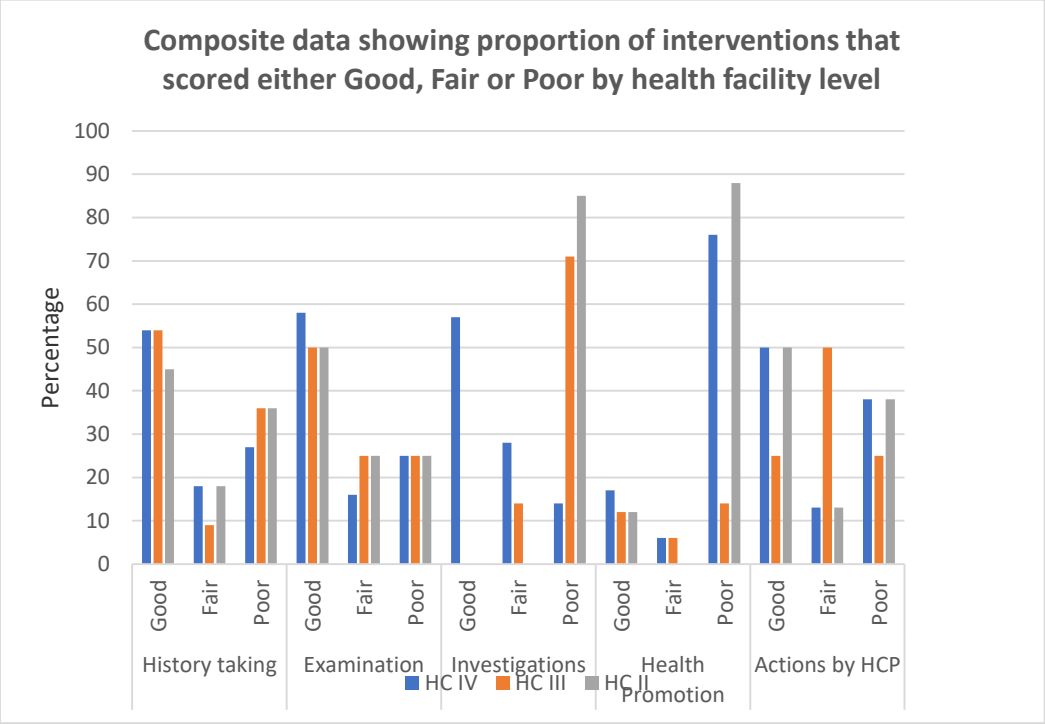
Action (services administered)	HC IV	HC III	HC II	Total
	n(%)	n(%)	n(%)	
Tetanus toxoid	12 (48)	16 (70)	7 (29)	35
Ferrous SO4	35 (95)	32 (91)	35 (97)	102
Folic acid	34 (92)	31 (89)	28 (78)	93
Treat incidental ailments	34 (92)	25 (71)	31 (86)	90
Dual protection against HIV	1 (3)	0 (0)	0 (0)	1
Debriefing mother	26 (70)	23 (66)	29 (81)	78
IPT dose	18 (94)	14 (78)	15 (94)	47
Mebendazole	4 (40)	5 (38)	11 (48)	20

Results in Table 4.6 indicate that, majority of the mothers received folic acid, ferrous sulphate, IPT and treatment of incidental ailments. Provision of Mebendazole and dual protection against HIV were the least actions provided to the pregnant women across health facilities.

4. 7 Level of implementation across the health facilities

To show overall performance of reach of the five components of antenatal care across health facilities, a composite indicator was created showing proportions of interventions that scored either good, fair or poor as showed in figure 4.1 Overall, there was varied level of implementation across the health facilities and the performance was below the required standards most of the time. History taking and examination were better performed across the three health facility levels with an average of 50% score for Good while health promotion was worst performed across all health facilities with all scoring over 70% for poor performance. HC IV performed best in investigations compared to levels that scored higher for poor performance in this category.

Figure 4.3: Level of implementation across health facilities



4.8 Barriers and Facilitating factors for FANC

Responses from health care providers on barriers and facilitating factors of FANC implementation were enumerated and are presented in table 4.7 and 4.8.

Table 4.7: Facilitating factors for FANC

Characteristic N=16	**n**	**%**
Trained health workers	14	88
Adequate number of health care providers	14	88
Visual aid charts	9	56
Supervision of services	9	56
Availability of required stocks	7	44
Empowered and informed clients	5	31
Organisation of services	5	31
Few pregnant women	2	13

Table 4.7 shows responses of the interviewed health care providers; that trained health workers and adequate number of health workers were the major (88%) reported facilitating factors for implementation of FANC followed by availability of visual aids and supervision of services (56%).

Table 4.8: Barriers to FANC implementation

Characteristic N= 16	**N**	**%**
Inadequate stocks of essential logisticssuch as laboratory reagents and medicines	14	88
Limited number of health care providers	10	63
Clients come too late for ANC	9	56
Providers forget	9	56
Too many clients	7	44
Lack of supervision and support	7	44
Staff not trained	4	25

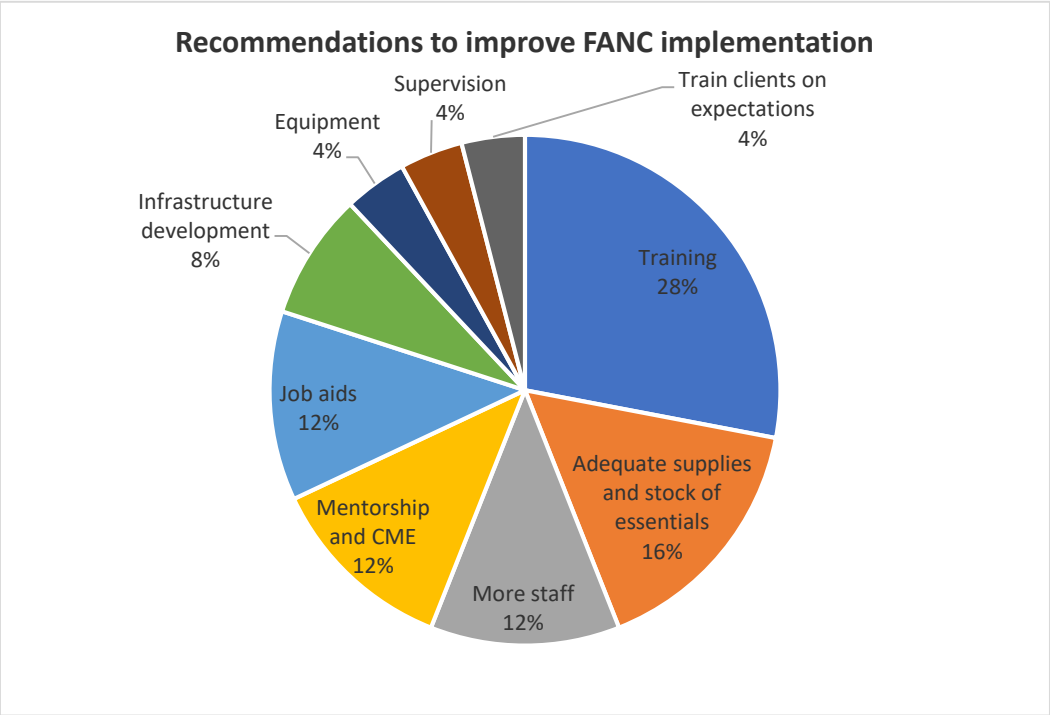
Health care providers reported that the major barriers to implementation of FANC include; inadequate stock of essential logistics such laboratory reagents, test kits medicines and many more (88%), limited number of health workers (63%), clients presenting late for ANC (56%) and providers forget to provide services (56%) as showed in table 4.8.

4.9 Reasons why health care providers think their health facilities implement FANC

To further explore how health care providers understood FANC and validate their perceptions on FANC implementation, they were asked why they thought they were implementing it at their health facility and most (21%) reported that because they followed the FANC guidelines as job aids. Other responses included; 1) encourage four visits 2) screen high risk mothers 3) give appropriate return dates 4) deliver all ANC package and 5) provide quality and planned care.

4.10 What needs to be done to improve FANC implementation?

Figure 4.4: Recommendations to improve FANC implementation



Health care providers made recommendations to improve FANC implementation including; training of health workers (28%), making sure there are adequate supplies and stocks of essential logistics (16%), more staff, mentorships and job aids (12%) as showed in figure 4.

CHAPTER FIVE: DISCUSSION

The aim of this study was to assess focused antenatal care (FANC) protocols implementation and identify barriers and facilitating factors in Jinja district. Focused antenatal care aims at providing individualized care to the pregnant mother with a set of prescribed activities during the recommended minimum of four visits to ensure the baby and mother are well and any problems identified are addressed promptly. The success of FANC is in ensuring that the prescribed activities/interventions are well implemented for each pregnant mother thus providing quality antenatal care services. Health centre at level IV, III and II are expected to implement the FANC protocols in a similar way when they provide services for pregnant women. Thus any differences in how FANC is implemented at the different health levels demonstrates health system ineffectiveness in delivery of quality services for pregnant women.

Overall, the study results show that FANC implementation across the three levels of health facilities (HC IV, HC III and HC II) in Jinja district does not meet the recommendations by the Ministry of health guidelines. There are similarities and differences in implementation of FANC; for example, performance under the history taking component shows that basic history was obtained from the pregnant women while under the examination component height measurement and vulvar examination were rarely performed across all the three levels of health facilities. Across the health facilities there was similar performance under the component of actions of the health care providers in delivering services such as medications and vaccinations. Observations of the investigation component shows that HC IV performed much better than HC III and HC II. Under the component of health promotion, pregnancy induced hypertension and prevention of mother to child transmission of HIV were the two topics consistently discussed across all the health facilities. Equally on the other hand, use of contraceptives and involving male partners in antenatal care were rarely discussed across the health centres. Trained health care providers and adequate numbers of health care providers were cited as the major facilitating factors while barriers to FANC were inadequate stock levels of essential logistics and inadequate numbers of health care providers.

These study's findings are consistent with previous research that demonstrated variation in implementation of FANC across health facilities (Conrad et al., 2012; Ejigu et al., 2013;

Fagbamigbe & Idemudia, 2015). These study results show the variation by level of health facility which further informs where improvements need to occur. For example, health promotion component of FANC was poorly performed by all the three levels while investigation components were well performed by HC IVs. This suggests that HC III and HC II lack skills or logistics to perform investigations for pregnant women as recommended in the FANC guidelines. An earlier study on challenges to providing essential tests including HIV, Syphilis and Anaemia to pregnant women who attend ANC found that often health facilities do not have the required logistics such as reagents or test kits (Baker et al., 2015). Therefore, interventions to improve performance in these health facilities would include stock management. On the other hand, the poor performance of health promotion interventions across all the health facility levels indicates a health system challenge where health promotion interventions are not prioritised.

In Uganda, there has been improvement in the number of pregnant women who make at least one visit for antenatal care services to 97%, while there are only 60% reported to make the recommended four visits (UBOS & ICF, 2017). Studies on quality of ANC have demonstrated inadequate quality of services based on the number of interventions of ANC components provided during a pregnant woman's visit to the health facility (. While current indicators for antenatal care focus on the number of women who make at least four visits during the course of their pregnancy, the quality of services the woman receives should be equally important (Hodgins & D'Agostino, 2014). The low coverage of antenatal care coupled with high maternal mortality rates in low and middle income countries, steers the discussion of ANC services toward improving the number of visits a pregnant woman makes during the course of pregnancy as opposed to the what services she receives. Nonetheless, findings from this study demonstrate the need to focus on the content of the services a pregnant woman receives during the ANC as this has an effect on mitigating pregnancy related complications.

The findings on history taking and examination in this study were similar to previous studies in Uganda that have demonstrated fair performance of these two components (Tetui et al., 2012; Wilunda et al., 2015). However, failure to perform tasks such as maternal height measurements and vulva examination has negative consequences. Maternal height is associated with adverse pregnant outcomes such as caesarean section and low birth weight

and thus an important measurement to assess risk during pregnancy (Munabi et al., 2015; Patil, Agrawal, & Shrivastava, 2015). In practice, a mother's height is used to make clinical decisions, however, such information may be missing because the health care worker did not conduct the assessment for one reason or another (Bucher et al., 2015). Health care providers may fail to perform an intervention because they do not know that it is important, or forget to perform it, or lack the skills and necessary logistics to perform it.

Differences were observed in the performance of the investigation component across health facilities. It is not surprising that HC II least performed for this component due to capacity gaps. In Uganda, HC II levels should be able to provide basic investigations such as HIV testing and counseling. Varying but overall low routine counseling and testing was found in this study. In previous studies, health care providers explained failure to perform investigations with lack of essential logistics such as test kits (Conrad et al., 2012; Ejigu et al., 2013; Wilunda et al., 2015). Nevertheless, some studies have found that even with logistics available, health care providers have often failed to conduct essential investigations due to poor organization of services (Tetui et al., 2012).

Health promotion is a key component of antenatal care which gives an opportunity for the health care provider to interact with the pregnant woman to provide vital information such as hygiene and nutrition, danger signs, preparation for child birth among others. However, often the pregnant mother leaves the health facility with inadequate knowledge on all these topics. This study found that most of the essential topics such as danger signs, hygiene and nutrition were rarely discussed across the health facilities except for pregnancy induced hypertension and prevention of mother to child transmission of HIV. Previous studies have shown that counselling and health education are poorly performed during antenatal care to the extent that importance of procedures performed is not explained to the pregnant mother (Ejigu et al., 2013; Tetui et al., 2012; Wilunda et al., 2015). This is a missed opportunity to engage pregnant mothers and provide vital information that may be necessary to improve ANC attendance, skilled birth attendance as well as future reproductive health choices and practices. Ayasi et al. (2014) linked poor new-born practices to inadequate health promotion activities pregnant mothers received during antenatal care.

In terms of differences across health facilities, some services were better provided at one level of the health facility compared to another with no clear explanation for the differences except for variations in the way services are organized at the specific health facilities. The findings from health care providers' interviews show that availability of trained health care providers in adequate numbers coupled with supervision of services and visual aid charts are critical facilitating factors. While it is common for health providers to request for training as a way to improve services, some studies have shown that training health care providers is not enough in ensuring delivery of quality care but inclusion of efforts to improve process of care may go a long way in improving services (Sipsma, Curry, Kakoma, Linnander, & Bradley, 2012).

Health care providers suggested that effective implementation of individualized care as prescribed by FANC requires an adequate number of health care providers which is a challenge in many health facilities. Uganda suffers from a critical shortage of midwives who are the health care providers for antenatal care thus compromising the quality of services received by the pregnant women (UNFPA, 2017). An earlier assessment of FANC implementation estimated a requirement of 46 minutes per observation of a pregnant woman, close to the time recommended by WHO which may not be possible given the significant staffing gaps (von Both et al., 2006).

Health care providers require tools such as job aids to facilitate the delivery of services in the right way for all clients (Rennie, Newton, & Hoffman, n.d.). A study found improvement in delivery of key messages to the pregnant women when health providers used job aids. Similarly these can act as a reminder for the providers to perform appropriate antenatal activities for the pregnant mother (Jennings et al., 2010). Other studies on implementation of guidelines have highlighted the importance of supervision as has the finding of this study (Nabyonga Orem et al., 2012).

Quality of antenatal care has been previously measured by composite indicators that compare performance for the different components of antenatal care package (Bayou et al., 2016; Bucher et al., 2015; Fagbamigbe & Idemudia, 2015; Kyei et al., 2012). All these studies have demonstrated overall inadequate quality of antenatal care services in line with this study's findings. This study used similar composite indicators with best-guess judgment on the cut-

off points to demonstrate differences and similarities in implementation of FANC across health facility levels.

While several factors have been highlighted as barriers and facilitating factors to implementation of FANC, the importance of how well services are organized and empowerment of the health care providers to identify and address the quality gaps cannot be underscored. In resource-limited settings such as Uganda, the shortages of either human resource, logistics or skills affect the overall quality of health care services but it does not necessarily mean that nothing can be done to address the system gaps. Support to health care providers to acquire adequate skills and use the skills to improve processes of care can yield better results. Although the study was conducted in one district in one region, the results can be generalized to other districts and regions in Uganda given the similarity in the health care system set up.

Limitations

It was not possible to conduct a more rigorous analysis such as regression analysis on the barriers and facilitating factors due to small number of health care providers in the study. Future research could focus on filling this gap. The barriers and facilitating factors (literature derived themes) of implementation were generalized across the health levels – while broad enough, perhaps a more rigorous way of looking at context specific themes would yield additional findings.

Recommendations

The study findings demonstrated inadequate implementation of FANC across health facilities especially for the components of health promotion and investigations. However, the other three components of history taking, examination and actions of the health care provider, showed variation in the implementation of specific interventions across the health facilities. This study would therefore recommend the following;

1. Provide adequate training to the health care providers to build their skills in implementation of FANC. The trainings should include onsite mentorship to guide them through areas of inadequacy.

2. Support process improvement efforts. The health care providers need to adopt process improvement approaches which help them identify contextual gaps and provide appropriate solutions.
3. Provide practical, easy to use job aids for the health care providers to provide reminders and guides to implementing expected interventions
4. Identify needed resources and logistics and ensure adequate supply at the health facilities.
5. At the district level, put in place mechanisms for monitoring implementation of FANC and identifying health facilities that need support – thereafter provide the necessary support and document lessons learnt that can be shared and applied across the health facilities.

Conclusion

Implementation of FANC protocols across different levels of health centers in Uganda is inadequate with mostly similarities and a few differences. Health care providers cited adequate number of trained health care providers as a facilitating factor for implementation while inadequate stocks of essential supplies and limited number of health workers were cited as barriers. There is need to invest in supporting health care providers to implement the FANC protocols by understanding the gaps in the process of care and addressing the contextual gaps.

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APPENDIX 1: DISTRICT HEALTH OFFICER'S LETTER OF APPROVAL

JINJA DISTRICT LOCAL GOVERNMENT

Telephone: 256 - 43 - 120259
Fax: 256 - 43 - 120012
E-mail: ddhsjja@utl.co.ug.

THE REPUBLIC OF UGANDA

Office of the Chief Administrative Officer,
Department of Health
Jinja District
P. O. Box 1551
JINJA

23st March, 2017.

Juliana Nabwire

Re: Permission to conduct research on assessing the implementation of Focused Antenatal Care and factors influencing its implementation in Jinja District.

Reference is made to your letter dated October 3 2016 requesting for permission to conduct the study in 9 health facilities in Jinja district.

The purpose of that communication is to inform you that I have no objection about the above study being conducted in Jinja district. However it's a requirement on your part to share a report of the study findings with the district health office

Yours faithfully,

Dr. Dyogo Nantamu
District Health Officer, Jinja

APPENDIX II : UNIVERSITY OF WESTERN CAPE IRB APPROVAL LETTER

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION

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06 December 2016

Ms J Nabwire
School of Public Health
Faculty of Community and Health Sciences

Ethics Reference Number: BM/16/5/32

Project Title: Assessing the implementation of focused antenatal care and factors influencing its implementation across health facilities in Jinja District, Uganda.

Approval Period: 24 November 2016 – 24 November 2017

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval. Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

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

PROVISIONAL REC NUMBER -130416-050

APPENDIX III: MILDMAY UGANDA RESEARCH AND ETHICS COMMITTEE APPROVAL LETTER

Mildmay Uganda Research and Ethics Committee (MUREC)

20 February 2017

Nabwire Juliana
Po Box 28745
Kampala Uganda

Dear Juliana:

Re: Initial approval of your Research protocol titled: #REC REF 0401-2017 "Assessing the implementation of focused antenatal care and factors influencing its implementation across health facilities in Jinja district, Uganda"

Thank you for submitting an application for approval of the above referenced protocol to MUREC.

I am glad to inform you that approval is hereby given to conduct the study; this approval is given following your exhaustive responses to initial comments raised by MUREC. This approval is for one year, effective 17th February 2017 and will expire on 17th February 2018. Extension beyond this expiry date and changes to the protocol including data collection tools must be brought to the attention of MUREC.

However, before you proceed you are required to submit the protocol to Uganda National Council for Science and Technology (UNCST) for registration.

You are also required to provide progress reports at an annual interval, to notify Mildmay Uganda Research Committee on completion, as well as when publishing results.

Please do not hesitate to contact us if you have any questions.

I wish you success in this endeavor.

Yours Sincerely,

Mary Odiit
Vice Chairperson
Mildmay Uganda Research and Ethics Committee (MUREC)

MILDMAY UGANDA RESEARCH ETHICS COMMITTEE (MUREC)
APPROVED
VALID UNTIL
DATE: 17th February 2018
P.O. BOX 24585, KAMPALA, UGANDA

APPENDIX IV: OBSERVATON CHECKLIST PAGE 1

Appendix 1: Observation checklist

Unique identification code		Gestation age (wks)		Visit number	

Timing of Visit	A. History Taking	score	B. Examination	score	C. Investigations	score	D. Health Promotion	score	E. Action	score
	Expected	Yes/No	Expected	Yes/No	Expected	Yes/No	Expected	Yes/No	Expected	Yes/No
A	Medical		Weight		Syphilis test		Address any problem		TT 1	
	Surgical		Height		Urine-albumen,		Involve husband in ANC		Ferrous SO_4	
	Obstetric		blood pressure		Urine - glucose		Draw up delivery plan		Folic acid	
< 16 weeks	Confirm period of gestation		Eye/palm for anaemia		RCT		Future PP, FP, TL, condom use		Treat incidental ailments	
	LMP		Oedema		HB		miscarriage & PIH		Dual protection for HIV	
	Contraceptive?		SFH		Blood group		PMTCT & VCT		Debriefing mother	
	Date of conception?		Vulval exam				Nutrition & hygiene			
	STI		Abdominal exam				Breast feeding/Infant			
	Social: smoking alcohol/drugs		Featal heart sound				Feeding			
							ITN use			
							Danger Signs			
Total scores										
24 – 28	Ask for problems		Weight		Urine albumen if BP is >140/90		Address problems		TT 2	
weeks	Date of 1st foetal movements		blood pressure		RCT if was negative at last visit		Discuss Laboratory results and need to treat partner		Ferrous SO_4	
	APH		Eye/palm for anaemia				Check PIH		Folic acid	
			Oedema				APH		IPT_1 dose	
			SFH				PMTCT/VCT		Mebendazole	
			Featal heart sound				ITN use		Treat incidental ailments	
			Rule out multiple pregnancy				Danger Signs		Dual protection for FP/HIV	
									Debrief the mother	

APPENDIX V: OBSERVATION CHECKLIST PAGE 2

Total score										
< 36 weeks	Ask for problems		Weight		Urine albumen if BP is >140/90		Address problems		Ferrous SO4	
	APH		blood pressure		RCT if was neagtive at last visit		Discuss labour/EROM		Folic acid	
			Eye/palm for anaemia				Discuss APH		IPT1 dose	
			Oedema				Review delivery plan		Treat incidental ailments	
			SFH				Re-discuss F/P		Dual protection for FP/HIV	
			Featal heart sound				PMTCT/VCT		Debrief the mother	
							ITN use			
							Postpartum Care			
							Infant Feeding			
							Danger signs			
Total scores										
>36 weeks	- Ask for problems		Weight		Urine albumen if BP is >140/90		Address problems		Ferrous SO_4	
			blood pressure		RCT if was neagtive at last visit		Discuss labour		Folic acid	
			Eye/palm for anaemia				Review delivery plan		Treat incidental ailments	
			Oedema				PMTCT/VCT		Dual protection for FP/HIV	
			SFH				ITN use		Debriefing mother	
			Featal heart sound				Sex and Postpartum Care			
			check lie				Pap Smear			
			check presentation				Danger signs			
Total scores										

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APPENDIX VI: HEALTH WORKERS QUESTIONNAIRE PAGE 1

Appendix 2: Questionnaire for the health workers

Unique identifier		Name of health facility	
Health facility level		Date of interview	
Type of health facility	a. Government b. Private	Name of interviewer	

Section A: Biographic data

1. Highest level of qualification attained?

1	Certificate	
2	Diploma	
3	Degree	
4	Post graduate	

2. What is your employment status at this facility?

1	Permanent staff	
2	Temporary staff	
3	Volunteer	

3. For how long have you provided antenatal care services (in years)

4. Does your facility implement focused antenatal care?

1	Yes	
2	No	

5. What is the reason for your response in question 6 above?

……..

6. How would you rate your knowledge of focused antenatal care?

1	Good	
2	Fair	
3	Poor	

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APPENXDIX VII: HEALTH WORKER QUESTIONNAIRE PAGE 2

7. Have you received any formal training on how to implement focused antenatal care?

1	Yes	
2	No	

8. What is the reason for your response in question 6 above?

……..

9. What would you consider as facilitating factors to the implementation of focused antenatal care services at this health facility? (tick what the respondent tells you)

	Factors/score	
1	Trained health workers	
2	Adequate number of health workers	
3	Availability of required stocks	
5	Few pregnant women	
6	Empowered and informed clients	
7	Visual aid charts	
8	Supervision of services	
9	Organisation of services	
10	Other ….	

10. What would you consider as barriers to the implementation of focused antenatal care services at this health facility? (tick what the respondent tells you)

	Factors/score	
1	Staff not trained	
2	Limited number of health workers	
3	In adequate stocks of essentials	
4	Too many clients	
5	Clients come too late	
6	Lack of supervision and support	
7	Providers forget	
8	Other……..	

11. What can be done at this health facility to improve (if need be) implementation of focused antenatal care services?

……

……

Thank you for your participation

MILDMAY UGANDA RESEARCH ETHICS COMMITTEE (MUREC)
APPROVED
VALID UNTIL
DATE: 17th February 2013
P.O. BOX 24985, KAMPALA, UGANDA

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APPENDIX VII: CONSENT FORM LUSOGA

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2809 Fax: 27 21-959 2872
E-mail: soph-comm uwc.ac.za

OLUPAPULA OLW'OKWIKIRIZA

Eriina ery'okunonenkereza:
OKwetegereza n'okuta eisira ku kubudhabudha abalinda n'ebiyambaku okukuta mu nkola mu malwaliro goonagoona mu distulikiti ey'e Idhindha mu Uganda.

Okunonenkereza kuno kukolebwa mu lulimi lwentegeera. Ebibuuzo byange ebigema ku kunonenkereza kuno biribwaamu. Nkitegeera nti okwetaba kwange mu kunonenkereza kuno kwidha kubaamu omuntu okuntambuliraku yeetegereza okubudhabudha kw'abalinda kwefuna bull lwendhidha mw'irwaliro. Era mwidha kubaamu n'okusomaku mu mpapula dhange edh'eby'obulamu. Ndhikiriza okwetaba mu kunonenkereza mu kyeyendere. Nkitegeera nga eriina lyange tiriidha okwasanguzibwa eri omuntu yeenayeena. Nkitegeera nti ndi wa idembe okuva mu kunonenkereza kuno ekiseera kyonakyona awazira kugha ensonga waire okufirwa obuyambi.

Ennamba ery'eyetabye .....

Ekinkumu ky'eyetabye .....

Olunaku lw'omwezi .....

Bwoba n'ekibuuzo kyonakyona ku kunonenkereza kuno, gya ku ndagiriro eyo wansi:-
Dr. Nabiryo Christine
Chairperson MUREC
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