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SCHOOL OF PUBLIC HEALTH COLLEGE OF HEALTH SCIENCES UNIVERSITY OF GHANA



**FACTORS ASSOCIATED WITH THE UPTAKE OF PRECONCEPTION
SERVICES AMONG WOMEN IN- FERTILITY AGE WITHIN THE
TARKWA-NSUAEM MUNICIPALITY**

BY

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**THIS THESIS/DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF PUBLIC
HEALTH DEGREE**



FEBRUARY, 2023

DECLARATION

I hereby declare that excluding the references which I have duly acknowledged, this submission is my own work towards my MPH dissertation and that, to the best of my knowledge, it does not contain any previously published material by any other person nor material which has already been accepted in any University or elsewhere for the award of any other degree.

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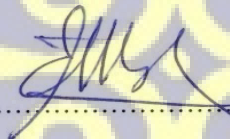
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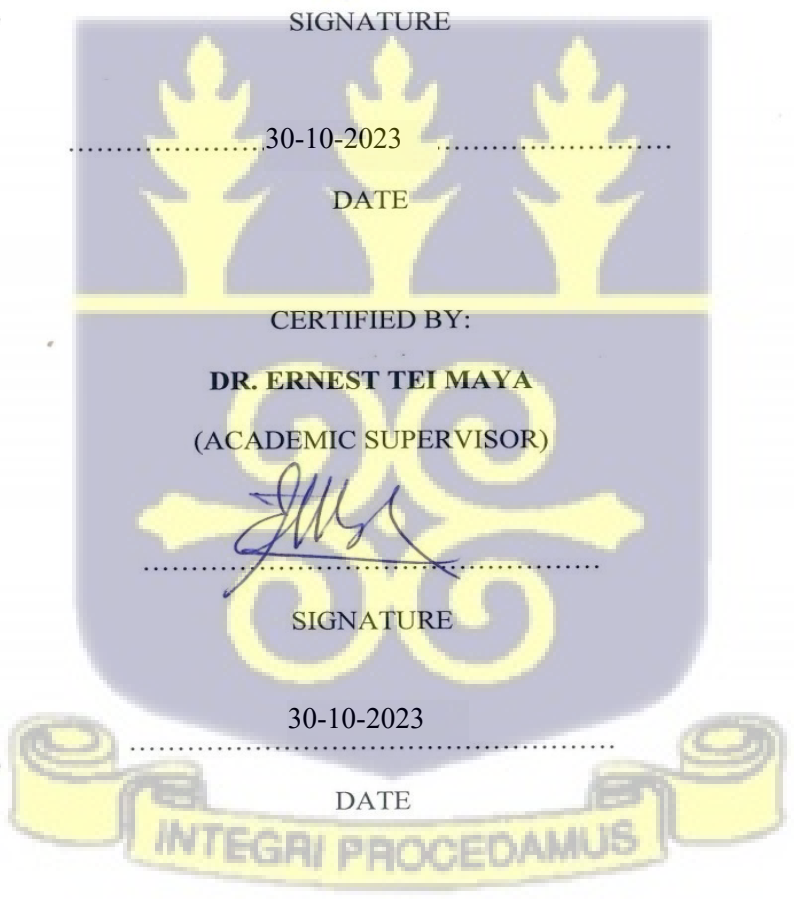
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INTEGRI PROCEDAMUS

DEDICATION

This dissertation is dedicated to my wife Sharon, my children Jeanette, Kara, Gracie, Franklin and my mother Janet. Thank you for your understanding and support.



ACKNOWLEDGEMENT

I give gratitude to the Almighty God for bringing me this far in this dissertation.

My heartfelt appreciation to my academic supervisor, Dr. Ernest Tei Maya. Thank you for guiding me through this dissertation.

Finally, sincere appreciation to my family for your love, prayer and support. God richly bless you.



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LIST OF ABBREVIATION

WHO – World Health Organization

PCC – Preconception Care

HIV – Human Immunodeficiency Virus

AIDS – Acquired Immunodeficiency Syndrome

PMTCT- Prevention of Maternal to Child Transmission

PNC – Postnatal Care

WIFA – Women in Fertility Age

HIV – Human Immunodeficiency Virus



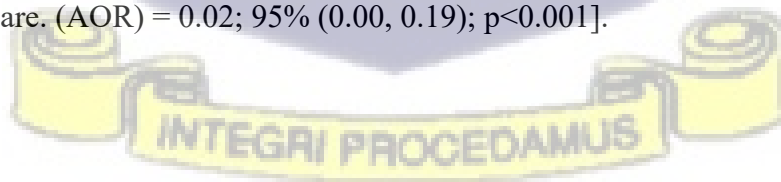
ABSTRACT

Background: Preconception services are interventions provided for women and couples prior to conception with the aim of improving maternal and neonatal outcomes. Uptake of this service is poor in many developing countries which already have bad maternal and neonatal figures.

Objective: The general objective of this study is to assess knowledge on preconception care services, uptake, and associated factors among women in fertility age within the Tarkwa-Nsuaem Municipality.

Method: This is a community based cross-sectional study of 281 women in fertility age within the Tarkwa-Nsuaem municipality. Simple random sampling was employed to recruit study participants. WIFA were recruited over a period from November 1st to December 30th 2022. A pre-tested and structured questionnaire was used for data collection, with face to face interviews. Data was cleaned and analysis done using Stata 16.0. Bivariable and Multivariable logistic regression models were used to determine factors associated with uptake. P values less than 0.05 was considered significant at 95% confidence level.

Results: The study found the uptake of preconception care to be 17.4% and that 37.7% of the women had adequate or good knowledge of preconception care services. Adequate knowledge of preconception care services was found to be positively associated with uptake of preconception care. (AOR) = 0.02; 95% (0.00, 0.19); $p < 0.001$].



Conclusions: There is a low uptake and poor knowledge of preconception care services. Adequate knowledge of preconception care was positively associated with uptake of preconception services. It is therefore imperative for healthcare staff to increase education on PCC and integrate this service into other services.

Keywords: Preconception care, Uptake, Women in fertility age,



CHAPTER ONE

1.0 INTRODUCTION

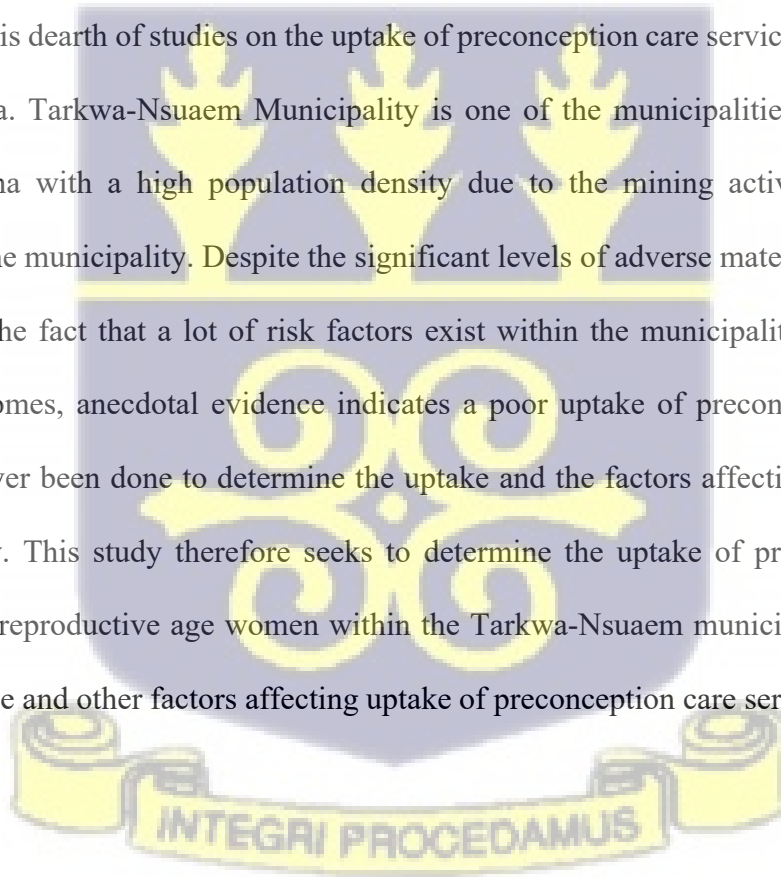
Preconception care (PCC) is a set of defined interventions provided before pregnancy in order to promote the health and well-being of women and couples (Fekene et al. 2020). Specifically, it is aimed at taking care of women and couples prior to conception as such, integrating this care into routine primary care visits can improve maternal and child health (Temel et al. 2015). The World Health Organization (WHO) recommends major areas to be addressed by the PCC package. These areas include but not limited to nutritional conditions (screening for anemia and diabetes, intake of folic acid and iron supplements, education and counselling on nutrition), tobacco use, genetic conditions, interpersonal violence, unwanted and rapid successive pregnancies, sexually transmitted infections, HIV and mental health (WHO, 2013). Further, the WHO highlights that, even in countries with strong public health programmes, there is no guarantee women enter pregnancy in good health. As a result, it is critical that necessary steps be taken before conception to maximize favorable health outcomes (WHO, 2013)

The specific aim of preconception care is to improve pregnancy outcomes for mothers and new-borns, by optimizing health before a possible pregnancy occurs. Preconception care also provides series of interventions before conception with the aim of identifying and modifying biomedical, behavioral and psychosocial risks to women's health through prevention and management (Demisse et al. 2019),

In sub-Saharan Africa, PCC utilization was as low as 8.1%, with only 15.3% of health care workers providing PCC services (Ukoha et al., 2022). Pre-conception micronutrient and folic acid supplementation were the least utilized, although folic acid supplementation and family planning services were the services most available in healthcare facilities (Ukoha et al., 2022). In Ghana, a study done found that pregnant women have low level of awareness and poor knowledge of Preconception care and seldom receive Preconception care (Dean et al.

2).Preconception care utilization was found by a study to be as low as 15% in the northern part of Ghana (Boakye-Yiadom et al., 2020. Preconception care services in Ghana, at all levels of care is faced with many challenges such as low levels of awareness and education, opposing religious and cultural beliefs, inadequate resources and healthcare personnel (Boakye-Yiadom et al., 2020). The study again revealed that nurses, midwives, and other healthcare professionals have low attitudes towards preconception, making this service virtually unavailable, especially in rural health facilities (Boakye-Yiadom et al., 2020).Preconception care services are available at all levels of care in Ghana, and women can assess the services as they wish but some rural and low level health facilities cannot provide all the package of care and therefore refer patients to higher centres for care (Hikimatu et al., 2021).

However, there is dearth of studies on the uptake of preconception care services and associated factors in Ghana. Tarkwa-Nsuaem Municipality is one of the municipalities in the Western Region of Ghana with a high population density due to the mining activities that attract migration into the municipality. Despite the significant levels of adverse maternal and neonatal outcomes, and the fact that a lot of risk factors exist within the municipality that can affect pregnancy outcomes, anecdotal evidence indicates a poor uptake of preconception care. No study has however been done to determine the uptake and the factors affecting uptake within the municipality. This study therefore seeks to determine the uptake of preconception care services among reproductive age women within the Tarkwa-Nsuaem municipality, as well as assess knowledge and other factors affecting uptake of preconception care services.

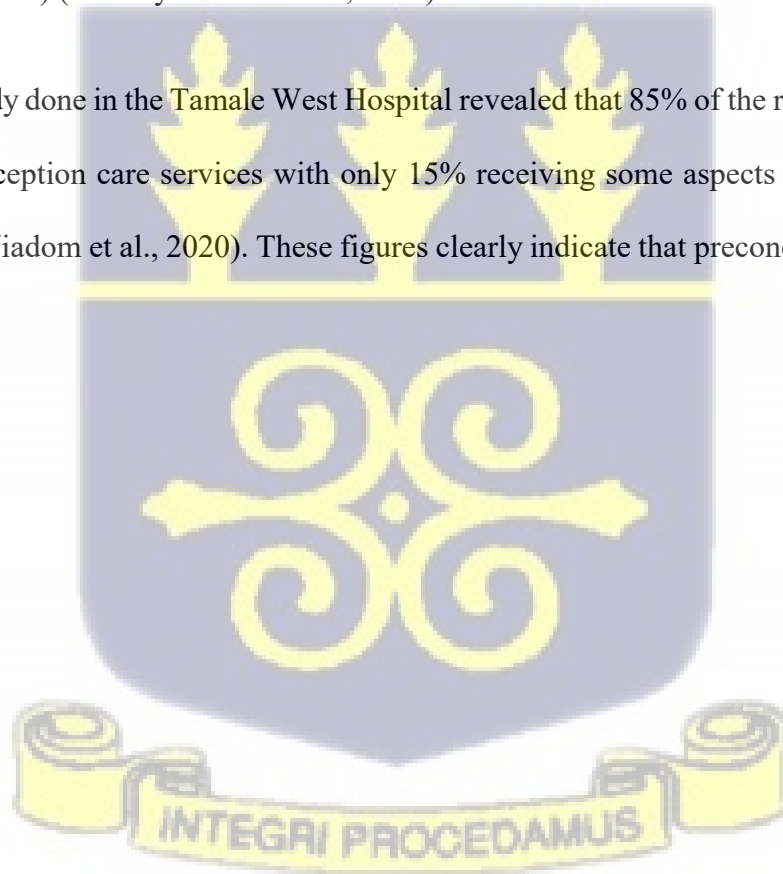


1.2 Problem statement

Despite the efforts by Tarkwa-Nsuaem Municipal Health Directorate to improve the uptake of preconception care services within the municipality, anecdotal evidence suggests that preconception care uptake is very poor. Globally, 40% of pregnancies miss the opportunity of preconception interventions (Chola et al., 2015).

In Africa, a systematic review gave an overall uptake of preconception care services as 18.72% (95% CI:14.44, 23.00) (Id et al., 2021). The pooled uptake of preconception care services in sub-Saharan Africa was also found in systematic review and meta-analysis to be 24.05% (95CI: 16.61, 31.49) (Woldeyohannes et al., 2021).

In Ghana, a study done in the Tamale West Hospital revealed that 85% of the respondents never utilized preconception care services with only 15% receiving some aspects of preconception care (Boakye-Yiadom et al., 2020). These figures clearly indicate that preconception care



uptake is low in Africa, and sub-Saharan Africa but much worse in Ghana and may give some credence to the anecdotal evidence that preconception care uptake is low in Tarkwa-Nsuaem, despite efforts in increasing preconception care education through radio and outpatient talks.

There is increasing evidence that preconception care improves women's health and offers better pregnancy outcomes for both the women and their new-borns, with the potential to positively influence 208 million pregnancies annually worldwide (Lassi et al.,2014; Sedgh et al., 2014)). This benefit of preconception care will be of great advantage to reproductive age women within the Tarkwa-Nsuaem Municipality which has significant risk profile for adverse maternal and neonatal outcomes.

With a total population of 90,477, with females making up 48.4% of this population and 51.8% of these women within reproductive age, the municipality has a general fertility rate of 99.7 births per 1000 women aged 15-49 years which is the second highest for the region (Ghana Statistical Service 2014). There is an increasing trend in the number of females with diabetes mellitus and hypertension with figures showing an increase from 577 female diabetic patients in 2019 to 1148 in 2021 and hypertension from 3083 cases in 2019 to 3837 in 2021 (DHIMS). Stillbirth rate is also showing an increasing trend from 15 per 1000 live births in 2019 to 17 per 1000 live births in 2020. Perinatal deaths also increased from 30 per 1000 live births to 31 per 1000 live births (DHIMS). Maternal mortality ratio is also showing an increasing trend from 125 per 100,000 live births in 2019 to 139 per 100,000 live births in 2020 (DHIMS). The percentage of pregnant women with syphilis also saw an increase from 4.15% in 2019 to 5.13% in 2020. The percentage of pregnant women who tested positive for HIV in the prevention of mother to child (PMTCT) programme increased from 1.42% in 2019 to 2.71% in 2020. Again, data also shows that 45% of pregnant women in 2019 and 40% in 2020 booked for antenatal care in the second and third trimester at which point we may have missed the opportunity for

early interventions. There is evidence that organogenesis starts early with closure of neural tube by six weeks of gestation, therefore delaying these interventions till pregnancy would not be of any benefit to the mother and baby (Milunsky, 1989).

Clearly, low uptake of preconception care within this municipality implies the benefit of preconception care would not be realized, and this may rather worsen maternal and neonatal outcomes, such as maternal and neonatal deaths.

This is even supported by global figures that approximately 810 women died from preventable causes related to pregnancy and childbirth every day in 2017 with most (94%) of these deaths occurring in low-resource settings (WHO, 2019).

Some studies done in Nigeria, Sudan and Sri Lanka have shown that the low uptake of preconception care is as a result of women's poor knowledge and awareness on preconception care (Idris et al., 2013, Yassin et al. 2012)

Maternal age, marital status, educational level, and availability of a unit for preconception were found as major factors affecting uptake of preconception care services (Demisse et al., 2019).

Other factors such as educational level, income, history of modern contraceptive use, history of postnatal care utilization, and regular employment were also found to affect knowledge as well as uptake of preconception care services (Fekene et al., 2020a).

In Ghana, not much has been studied on preconception care but a study in the northern part of Ghana showed low level of awareness, poor knowledge, and negative attitude towards preconception care as factors influencing preconception care.

Preconception care services are provided by all levels of healthcare facilities within the Tarkwa-Nsuaem Municipality to different extent with lower level facilities such as CHPS compounds and health centres offering some aspects of the package and referring to higher facilities such as district hospitals for the additional packages. Lower level facilities usually

offer family planning services, some vaccinations, screening for hypertension and Diabetes and counselling services, while higher centres offer the full package of preconception care. Services are usually available during the day between 8am to 5pm day shifts, and women can access it during the weekdays (DHIMS). Services are not available on weekends and public holidays.

There is no available record of a study done in Tarkwa-Nsuaem to determine the uptake or factors affecting uptake of preconception services despite all the risk factors and adverse maternal and neonatal outcomes.

This study will therefore assess the uptake and the other factors affecting uptake of preconception care services within the Tarkwa-Nsuaem Municipality. Findings will help give a picture of the state of preconception care services within the municipality and the factors affecting it, as well as help in determining which interventions to put in place to improve the services.



1.3 Justification

Although preconception care has been shown to improve maternal and neonatal outcomes, little is known about preconception care services within Tarkwa-Nsuaem municipality, which has seen an increasing trend in adverse maternal and neonatal outcomes, and increasing numbers of women in reproductive age group having high risk factors for poor maternal and neonatal outcomes.

This study is needed to determine the uptake and the factors associated with the uptake in order to direct policies and interventions to help improve maternal and neonatal outcomes.

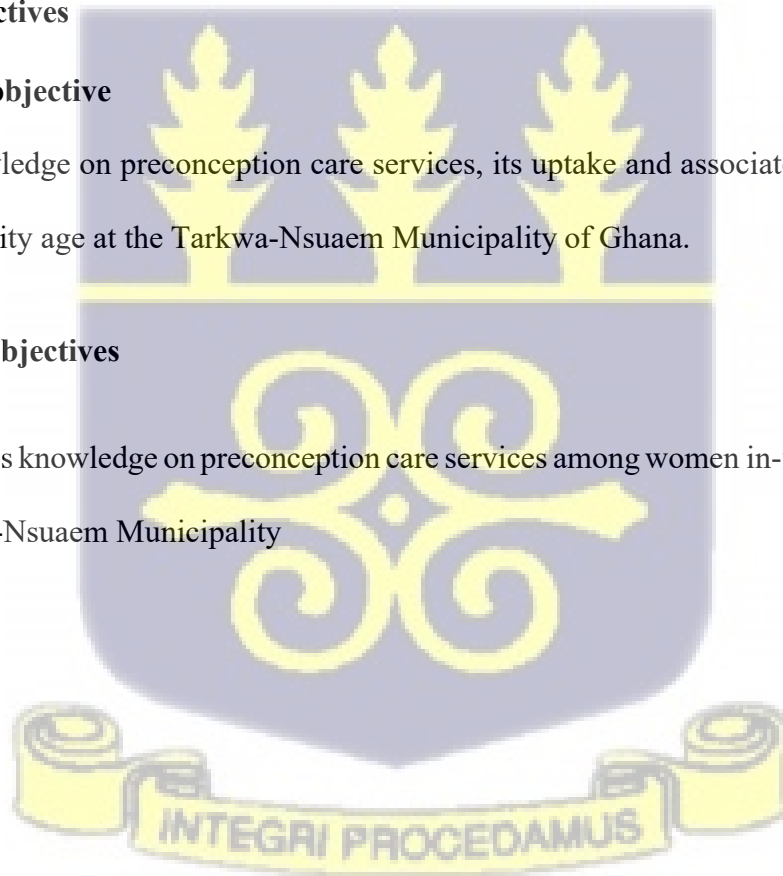
1.4 Study objectives

1.4.1 General objective

To assess knowledge on preconception care services, its uptake and associated factors among women in-fertility age at the Tarkwa-Nsuaem Municipality of Ghana.

1.4.2 Specific objectives

1. To assess knowledge on preconception care services among women in-fertility age at the Tarkwa-Nsuaem Municipality



2. To determine the uptake of preconception care services among women in-fertility age at the Tarkwa-Nsuaem Municipality
3. To examine factors associated with women's uptake of preconception care in the Tarkwa-Nsuaem Municipality

1.5 Research questions

1. What is the level of knowledge on preconception care services among women of reproductive age within the Tarkwa-Nsuaem municipality?
2. What is the prevalence of preconception care services uptake in the Tarkwa-Nsuaem Municipality?
3. What factors influence women's uptake of preconception care in the Tarkwa-Nsuaem Municipality?



CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Preconception Care Services

Preconception care is the provision of biomedical, behavioural, and social health interventions to women and couples prior to conception with the aim of influencing positively their behaviours, and other factors (individual and environmental) that could contribute to adverse maternal and child health outcomes, ultimately improving their health status (WHO, 2013).

Preconception care therefore provides preventive, promotive, or curative healthcare services as well as social interventions before conception occurs, and is a continuum including care before, in between and after pregnancy (WHO, 2013).

World Health Organization recommends key areas to be addressed in the preconception care services including nutritional counselling, screening for nutritional conditions like anaemia, and diabetes mellitus, supplementation with folic acid and iron, education to prevent early (adolescent) pregnancy and cessation of tobacco and alcohol, screening for genetic conditions, and sexually transmitted infections including HIV, vaccinations, prevention of interpersonal violence, protection from environmental hazards, family planning counselling, infertility assessment and support for mental health (WHO, 2013).



Preconception care services target risks existing before pregnancy, and direct resources and efforts toward optimizing the reproductive health and knowledge of the women, men, and couples for improved maternal and neonatal outcomes (Lassi et al., 2014).

Adolescent pregnancy is associated with poor maternal and neonatal outcomes, hence the preconception care services propose counselling, sexuality education, and access to contraception as a means to prevent this (Lassi et al., 2014; Chen et al., 2007).

Nutrition plays a significant effect on the future pregnancy and will help the malnourished women, and adolescents as well as those with specific vitamin deficiencies to optimize nutritional status before pregnancy (Lassi et al., 2014).

Folic acid supplementation has been associated with reduction in risk of neural tube defects and so 400ug of folic acid recommended at least 3 months prior to conception and even higher doses for women with previous baby with neural tube defects (World Health, 2016).

Short inter-pregnancy interval is associated with preterm births, low birth weight and small for gestational age babies and the family planning component of preconception care is to address this (World Health, 2016).

Screening and treatment for sexually transmitted infections, as well as causing behavioral changes to avoid re-infections can prevent spread of infection to newborns and results in improved outcome for both mother and baby (Lassi et al., 2014).

HIV/AIDS screening as part of preconception care encourages both couple to know their status before attempting pregnancy, and provision of treatment to positive women to reduce the risk of transmission to their newborns (WHO, 2012).

Screening and management of chronic diseases such as hypertension, diabetes, and mental health diseases such as depression and anxiety has the potential to improve maternal and child health outcomes (WHO, 2013).

Delivery of preconception care services must be integrated into local health programmes, and offered at various levels. It should be integrated into the school health and reproductive health education programmes in which adolescents are educated on sexuality, preventing sexually transmitted infections, unwanted pregnancies and appropriate nutrition. Delivery within the health system by primary level health workers such as community health nurses ensures delivery of services such as education, family planning, vaccinations, growth monitoring, nutrition and control of common diseases to the doorsteps of the community. Through premarital counselling and screening, couples can screen for infectious and genetic diseases. Interventions can also be delivered during the postnatal care, and advantages taken during health visits to the hospital. The use of community support groups, mass media campaigns, workplace programmes, and food fortification are various other ways of delivering certain packages in preconception care services (Lassi et al., 2014).

Ample evidence exist that preconception care interventions can improve maternal and infant outcomes (H. K. Atrash et al., 2006). This implies that maternal and neonatal morbidities and mortalities can be reduced through effective evidence based preconception care interventions.

To achieve optimum health for mothers and children , Preconception Care for women in reproductive age should be on the rise (Asresu et al., 2019). Preconception Care as an important step in reproduction involves a wide range of interventions including reproductive planning and the use of effective contraception, counselling to desist from substance abuse, along with the prevention of smoking and alcohol intake; folic acid and iodine supplements; weight loss in those who are overweight or obese; and medication modifications. Preconception Care

Services have proven to have benefits for women desiring to be pregnant and even for those who wish not to have babies (H. Atrash & Jack, 2020). For the former, it helps in the reduction of potential risk associated with pregnancy, thereby promoting healthy outcomes and lifestyle in general. For the latter, it helps in preventing unwanted pregnancy and moreover encourages healthy lifestyle. In Preconception Care Programs, potential parents including both men and women are engaged in both educational and management interventions to reduce risk accompanying pregnancy and birth (Lassi et al., 2014).

2.2 Uptake of Preconception Care Services

Worldwide, 60% of pregnancies do not miss the opportunity of preconception interventions (Chola et al., 2015). A systematic review done in Africa found an overall uptake of preconception care services to be 18.72% (95% CI:14.44, 23.00) (Id et al., 2021). A sub-Saharan African systematic review and meta-analysis also revealed a pooled uptake of preconception care services to be 24.05% (Woldeyohannes et al., 2021). In Ghana, a study done in the Tamale West Hospital revealed that 85% of the respondents never utilized preconception care services with only 15% receiving some aspects of preconception care (Boakye-Yiadom et al., 2020).

Clearly, uptake of preconception services is a challenge globally but the situation worsens in developing countries within sub-Saharan Africa including Ghana.

In developed countries, the focus on preconception care has increased and many national protocols and recommendations have been set over the years (Williams et al., 2012). However,

this is not the case for both developing and underdeveloped countries. Despite the effort by healthcare systems to increase preconception care delivery and knowledge to reproductive age women, the uptake of preconception care among the target population is low (Williams et al., 2012). Improved access to preconception counselling and education through radio education, outpatient education, community education, and improved capacity and skill of healthcare staff are some of the efforts to increase preconception care utilization (Hikimatu et al., 2021). There is, however low awareness and poor attitude towards preconception care. Some healthcare workers also had poor attitudes, and there was lack of clear policies and guidelines on providing preconception care (Boakye-Yiadom et al., 2020; Hikimatu et al., 2021)

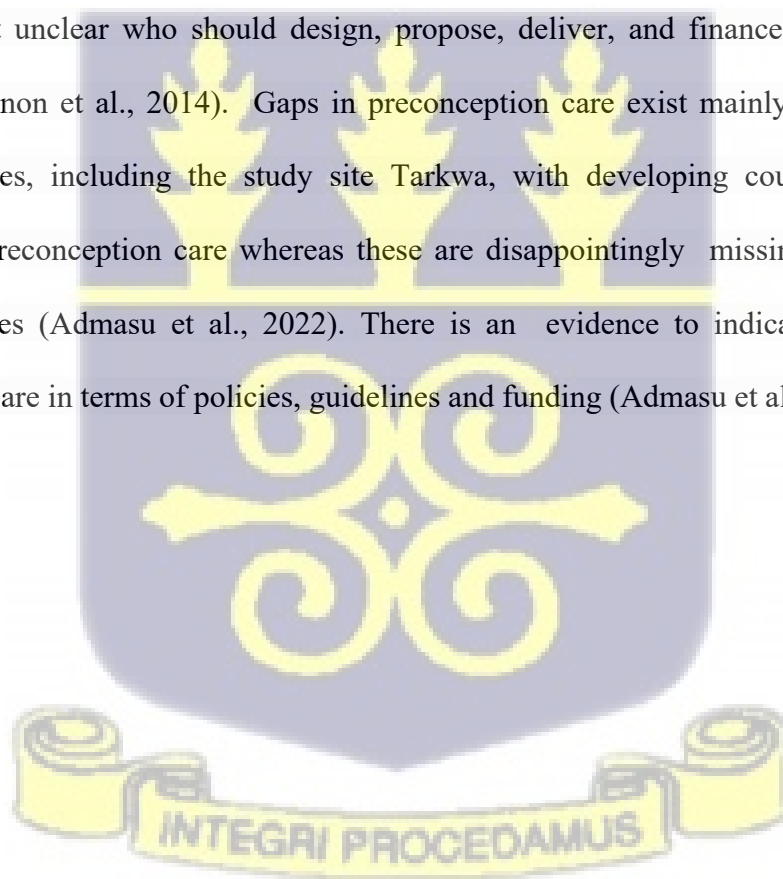
According to studies, almost hundred percent of couples with the intention of having pregnancy are predisposed to at least one of the risk factors in case of adverse pregnancy outcomes. Even during pregnancy, prevalence of most of these risk factors persist. Advocating for intensification of preconception care in various health care systems is needful because of its benefits in causing a drastic reduction in foreseeable risk factors during pregnancy and post-natal and optimize health in the future for mother, child and even father (Williams et al., 2012).

Irrespective of the benefits preconception care affords, the number of women who seek this type of care annually has not been encouraging. Analysis of data from large sample of women in the United States over a six-year period was done by the Pregnancy Risk Assessment Monitoring System. Within the six-year period, only 31% of women before conception were reported to have received preconception care. The investigation further reported that the women with high risk of pregnancy outcomes were less probable to have received any form of preconception care (Oza-Frank et al., 2014).

In the United Kingdom, a relating literature showed that only 27% of women were reported to have received any form of preconception care (Stephenson et al., 2014). Quite consistently, uptake of preconception care has been low. One literature attributed this to lack of

ineffectiveness on the part of the health professionals (Shannon et al., 2014). The study noted that medical professionals, especially community midwives, general practitioners (GPs), Obstetricians and other medical specialists have the ability to significantly increase the level of uptake of preconception services in the various health systems such as hospitals, clinics and CHPS (Shannon et al., 2014). Despite the effort to make the target population aware of preconception care thereby increasing uptake, health care professionals are not effectively and systematically working to cause this improvement (Tuomainen et al. 2013; Vos et al. 2016).

Even though there is agreement on the substance of preconception care, there is little agreement on the best tactics to increase preconception care adoption (Temel et al., 2017; World Health Organization, 2013). This is chiefly attributable to preconception care's ineffective structure, which leaves it unclear who should design, propose, deliver, and finance preconception care solutions (Shannon et al., 2014). Gaps in preconception care exist mainly in low and middle income countries, including the study site Tarkwa, with developing countries having clear strategies for preconception care whereas these are disappointingly missing in low to middle income countries (Admasu et al., 2022). There is an evidence to indicate gaps in existing preconception care in terms of policies, guidelines and funding (Admasu et al., 2022; Hikimatu et al., 2021).



One of the biggest challenges in increasing preconception care participation is that individuals who might benefit the most from it are either oblivious of it or do not believe themselves to be the intended audience (Poels et al., 2016; Van Voorst et al., 2017). According to Barrett et al., various preconception care methods are required for distinct groups of women with varying pre-pregnancy health and care investments. Based on these findings, clinical professionals say it's important to remember that expectant parents are more concerned about their own specific benefits and risks than the total bundle of preconception care goals (Barrett et al., 2015). Patients who wanted to learn about their unique genetic risk, for example, were not eager in a generalized preconception session. Customized treatment, including specific identifying risks and a methodical approach of potential health advantages, is thus required not just for effective preconception care delivery but also for increased preconception care uptake.



Another study found insufficient knowledge of preconception care amongst women and also some medical professionals, low socioeconomic status, ignorance, a shortage of care providers, and inadequate health habits as some other factors affecting uptake (Appiah et al., 2021).

2.3 Knowledge of women on preconception services

Uptake of preconception care services has been positively associated with the level of knowledge of women on preconception care services, and sources of this knowledge is usually from healthcare providers, friends, family, media and the women's own experiences from previous pregnancies and childbirth (Elsinga et al., 2008).

A study in Nigeria revealed that 73.7% of reproductive aged women lacked knowledge on the preconception care services and the benefits derived from these services, and this was associated with decreasing educational level (Olowokere et al., 2016).

A systematic review and meta-analysis in sub-Saharan Africa also found that only 33.27% of reproductive aged women had good knowledge of preconception care services and a positive association between knowledge and uptake of preconception care services. The study found a twofold increased likelihood of uptake of preconception care services among women with good knowledge compared to those with poor knowledge. (Woldeyohannes et al., 2021). Demisse et al. in another study in Ethiopia found that 82.7% of respondents had poor knowledge of preconception care, and that only 17.3% of the respondents had good knowledge (Demisse et al., 2019).

Maternal health and health of children or newborns is a significant indicator for the total health of a nation since the progress of every economy is dependent on the young ones. Arguably, every home including children is managed by women. Owing to this, the health of women must be taken into great consideration. Moreover, every woman of reproductive age is a prospective

candidate for preconception care. Child death as a result of preterm births has been viewed as a major challenge in both developing and underdeveloped countries. Challenges associated with pregnancy and childbirth such as, low birth weight, still birth, preterm birth and others are still on the rise in especially low income and middle-income countries. All these problems are associated with a poor or lack of knowledge of women about preconception care (Girum & Wasie, 2017).

Numerous authors have outlined risk factors accompanying pregnancy and child birth. If these predisposing factors can be fully addressed, it can be done before pregnancy (Manikkam et al.2012; Nieuwenhuijsen et al. 2013; Filardi et al., 2018). Addressing these challenges early before pregnancy will lead to healthy outcomes of mother and child. Understanding of matters relating to maternal health and the risk associated right before pregnancy by women in reproductive years is imperative in giving rise to healthy babies and optimum health of mothers during pregnancy and after delivery.

Nonetheless, statistics of uptake in Africa is low (Olowokere et al., 2016). Further, the idea of preparing before pregnancy is still a major challenge for most women living in Ghana because of their level of knowledge and awareness of preconception care. In a survey performed in Eastern Nigeria, the researchers discovered that women's awareness level of preconception care is reasonable and tends to increase with literacy rates, however this does not interpret into desired attitude toward preconception care, as the report concluded that the exercise of preconception care seems to be almost non-existent (Ezegwui et al., 2008)).

2.4 Maternal Factors

2.4.1 Awareness of Reproductive Women on Preconception Care

Awareness of preconception care services or the fact that certain interventions prior to pregnancy is beneficial to the pregnant woman and the baby has been shown to be associated with the uptake of preconception services, with a study by Olowokere et al. revealing that 65% of respondents were aware of the existence of preconception care services (Olowokere et al., 2016).

For any woman of childbearing age, preconception care (PCC) is among the most fundamental areas of healthcare and the care obtained during this key era is absolutely crucial because it builds the groundwork for the mother, baby, and family's future wellbeing (Mitchell et al., 2012).

The National Demographic Health Survey estimated in 2014 that maternal deaths account for 32 percent of all deaths among women aged 15 to 49 years (Ghana Statistical Service, 2014).. Preconception care is a little-known but crucial cornerstone of maternal and child healthcare, serving as a kind of principal preventive measure for babies and subsequent prevention for future mothers (Ghana Statistical Service, 2014).

In relation to these obstacles in underdeveloped countries, where the majority of pregnancies are unplanned and preconception care is still very much in infant stages, awareness of preconception care services among women, their perceptions, and how they can access this critical type of care and if they are even informed concerning this form of care is necessary to ascertain. Awareness of women in reproductive ages on preconception care services is very much important and must be assessed (Agida et al., 2016; Lamina, 2015).

In a study conducted to analyse the awareness of women on preconception care, it was revealed that 34.2% of women had awareness on Preconception Care before index pregnancy (Akinajo et al., 2019). The researchers further reported a disconnection between their awareness and practice.

In addition, several studies have been carried out on awareness of women on preconception care in Ethiopia. Like the study carried out in Nigeria, reports from these studies revealed that there was some level of gap between awareness of women on preconception care and undertaking of preconception care (Ayalew et al., 2017; Gezahegn, 2016; Kassa et al., 2018; Fekene et al., 2020; Yohannes et al., 2019). In Ghana, a study done at Tamale West Hospital revealed only 34.5% of women had awareness of preconception care services. Hence, researchers reported the need for intensification of education and awareness by health professionals (Boakye-Yiadom et al., 2020). In another literature, the analysis revealed that preconception care public awareness campaigns, situation service delivery projects, and organizational and public policy guidelines are all important ways for preconception care management delivery and acceptance (Doe et al., 2022). Regarding tactics for preconception care promotion among university students, participants suggested prepayment schemes, walk-in services, mobile preconception care clinics, and preconception care incorporation into university curricula (Doe et al., 2022).

2.4.2 Previous use of preconception services

Women with a history of previous utilization of postnatal or preconception care utilized preconception care more than their counterparts with no such exposure (Ukoha et al., 2022). This is because previous history of utilization is often associated with good knowledge and positive attitudes, both factors of which have been documented to be good predictors of uptake of preconception care service (Alie et al., 2022). In a Malaysian study to determine patterns of pre-pregnancy care usage among women of reproductive age, high knowledge about the

services, in addition to a positive perception that results in positive attitudes, was found to positively influence usage of preconception care services. Knowledge of preconception care services was derived from previous utilization of the service (Talib et al., 2018). Previous use of preconception services influences future pregnancy decisions, especially among women who experienced adverse effects such as neonatal death in the previous pregnancy (Lemma et al., 2021). Such mothers will be willing to gain more knowledge from health care professionals on how to prepare for future pregnancies, and avoid such ill fate in subsequent pregnancies (Lemma et al., 2021). Previous ANC and PNC use among women in Ethiopia was found to be significantly associated with preconception care utilization (Alie et al., 2022).

2.4.3 Pre-existing illness

A systematic review and meta-analysis assessing mother's utilization of preconception care and associated factors in Africa found that women with pre-existing medical conditions such as diabetes mellitus and hypertension were 29% less likely to utilize preconception care than their counterparts (Id et al., 2021). Another systematic review from sub-Saharan Africa however found that women with chronic medical conditions rather utilized preconception care more than those without these conditions (Ukoha et al., 2022). Women with pre-existing medical conditions typically have a poor prognosis during pregnancy, necessitating close observation by medical personnel. Women in a Malaysian study who had pre-existing illnesses were found to have higher odds of utilizing preconception care services, compared to those who had no prior medical conditions (Talib et al., 2018). It is noteworthy, that pre-existing illness is a good determinant for preconception care uptake because chronic disease screening and management, as well as screening and testing for infectious diseases, including sexually-

transmitted infections (STIs) and HIV, form part of the services provided under preconception care (Habte et al., 2021). These services form part of pre-conception counselling and are required to elicit potential complications of the pregnancy (Lassi et al., 2014).

2.4.4 Previous family planning use

A study by Fekene et. al revealed that women with a previous use of family planning services are 2 times more likely to have good knowledge and utilize preconception care compared with women without previous exposure (Fekene et al., 2020a). Another study also found that women with a previous family planning usage had odds of preconception care uptake of 2.45 times compared to those without a previous exposure (Admasu et al., 2022). These findings can be attributed to the fact that nutritional counselling and family planning are an essential service provided during preconception care delivery (Lassi et al., 2014). Among women of reproductive age in southwest Ethiopia, previous use of family planning was documented to influence uptake of preconception care services (Alie et al., 2022). In a qualitative study among women desiring pregnancy in rural areas using focus group discussions, family planning use was found to influence usage of preconception care services (Doke et al., 2021).

2.4.5 Unplanned Pregnancy

Unplanned pregnancy is described as a pregnancy that occurs sooner than expected or when no additional offspring are sought at the point of conceiving (Postlethwaite et al., 2010). Unplanned pregnancy causes difficulties for couples and puts millions of women and children's life in danger around the globe. It raises the mortality risk associated with abortion, particularly in nations where abortion is prohibited (Yanikkerem et al., 2013).

The prevalence of unplanned pregnancy is so high in Turkey, it is a major social and public health issue. 29.0 percent of pregnancies are unexpected, including 11.0 percent of poorly

timed pregnancies and 18.0 percent of unwanted pregnancies as revealed by the 2008 Turkey Demographic Health Survey (TDHS). According to published studies, unplanned pregnancy is linked to poor uptake of preconception care, prenatal care, and low birthweight, (Yanikkerem et al., 2013). Pregnancy-related difficulties, depression during pregnancy, and a high rate of postpartum depression were all caused by a lost chance to employ folic acid supplements (Agida et al., 2016). Unplanned pregnancies deprive women of the opportunity for preconception care, and this has the potential to increase pregnancy risk for both mothers and their babies (Yanikkerem et al., 2013).

2.4.6 Previous use of PNC services

Fekene et. al in a study from Ethiopia reported that women with a previous history of PNC visits were six times more likely to utilize preconception care services (Fekene et al., 2020a). Another study by Alie et. al from SouthWest Ethiopia also confirmed a positive association between previous PNC visits and preconception care uptake (Alie et al., 2022). This may be due to the fact that such women gain a lot more knowledge and understanding during the PNC visit as some components of preconception such as family planning, lifestyle modification, and screening for medical conditions are discussed.

2.5 Demographic Factors

2.5.1 Age, Marital status, Educational level

Age, marital status, and educational level of women were found to be significantly associated with uptake of preconception care. Women aged 34-49 years were 3.6 times more likely to use preconception care than those aged 15-24 years. Women with no formal education were found to be 92.4% less likely to utilize preconception care compared to women with educational level

above secondary school. Single women were also 93.8% less likely to access preconception care compared to those who were married (Id et al., 2021). Another systematic study from sub-Saharan Africa found that married women who received support from their husbands utilized preconception care more than their counterpart single women (Ukoha et al., 2022). Another study from China also found that uptake of preconception care was higher in women above 30 years and primiparae (Du et al., 2021).

2.5.2 Occupation and Income

A community based cross-sectional study found that women with stable employment were 2 times more likely to have a good knowledge and to utilize preconception care than women without stable employment (Fekene et al., 2020a). This study also revealed that women with good incomes were 4 times more likely to use preconception care compared with those with low income (Fekene et al., 2020a). Again, another study in southwest Ethiopia among reproductive age women found that women with better family incomes were more likely to utilize preconception care services, compared to women with poor family income (Alie et al., 2022). Thus, women who are gainfully employed are more likely to patronize preconception care services, compared to women who have no form of occupation or income.

2.5.3 Previous adverse pregnancy outcome

A systematic study revealed that women with a previous adverse pregnancy outcome tended to use preconception care more than those without such experience (Ukoha et al., 2022). The odds of preconception care uptake in women with a previous adverse birth outcome was found by another study to be 3.15 times higher than women without such experience (Admasu et al., 2022). Women who experience congenital abnormalities or neonatal deaths in previous pregnancies seek health care personnel counsel on how to prevent future occurrences. It is noteworthy that

the main goal of preconception care services to improve maternal health outcomes, as well as child health outcomes. Thus, health care personnel tend to give extra attention to women who have previous bad outcomes in pregnancy (Habte et al., 2021).

2.5.4 Previous deliveries (Parity) and number of live births

Shadab et. al in a study in Iran with multiparous women found that having two or more deliveries had a negative association with preconception care (Shadab et al., 2018). This may be due to the fact that these women become complacent, more experienced and less anxious about the preconception and conception process and so tend to downplay the significance of preconception care. Another study by Ayalew et. al in North-Western Ethiopia however found that multiparous women were 2.3 times more likely to utilize preconception care compared to primiparous women (Goshu et al., 2018).

2.6 Accessibility Factors

2.6.1 Availability of preconception care unit and services

A study in Ethiopia revealed that women who indicated availability of preconception care units and services in the health facilities they attended were 14 times more likely to utilize preconception care compared to those who did not know about the existence of such units (Id et al., 2021). Another systematic study from sub-Saharan Africa also revealed that women with awareness of the availability of preconception care units in the health facilities had increased uptake of preconception care compared to their counterparts without such awareness (Ukoha et al., 2022). According to Talib et al. (2018), poor uptake of preconception care among Malaysian women can be attributed to poor awareness of the women on the existence of preconception care units. Further, in an Ethiopian study, low awareness levels exhibited by

mothers pertaining to the availability of preconception care units was discovered to have negatively affected uptake of preconception care services (Admasu et al., 2022).

2.6.2 Cost of preconception care

A systematic study from sub-Saharan Africa found that the cost of preconception significantly influenced the uptake of pre-conception care (Ukoha et al., 2022). Cost of care for preconception services does not only pertain to direct costs incurred from service delivery, but indirect costs including transportation fares (Alie et al., 2022). Consequently, women whose husbands have more sustaining jobs are able to cater for the cost involved in travelling to utilize preconception care services, compared to women whose husband's work low-paying jobs (Alie et al., 2022). Generally, preconception care is considered cost-effective in that adverse health effects are easily identified and corrected before they progress beyond control (Admasu et al., 2022).



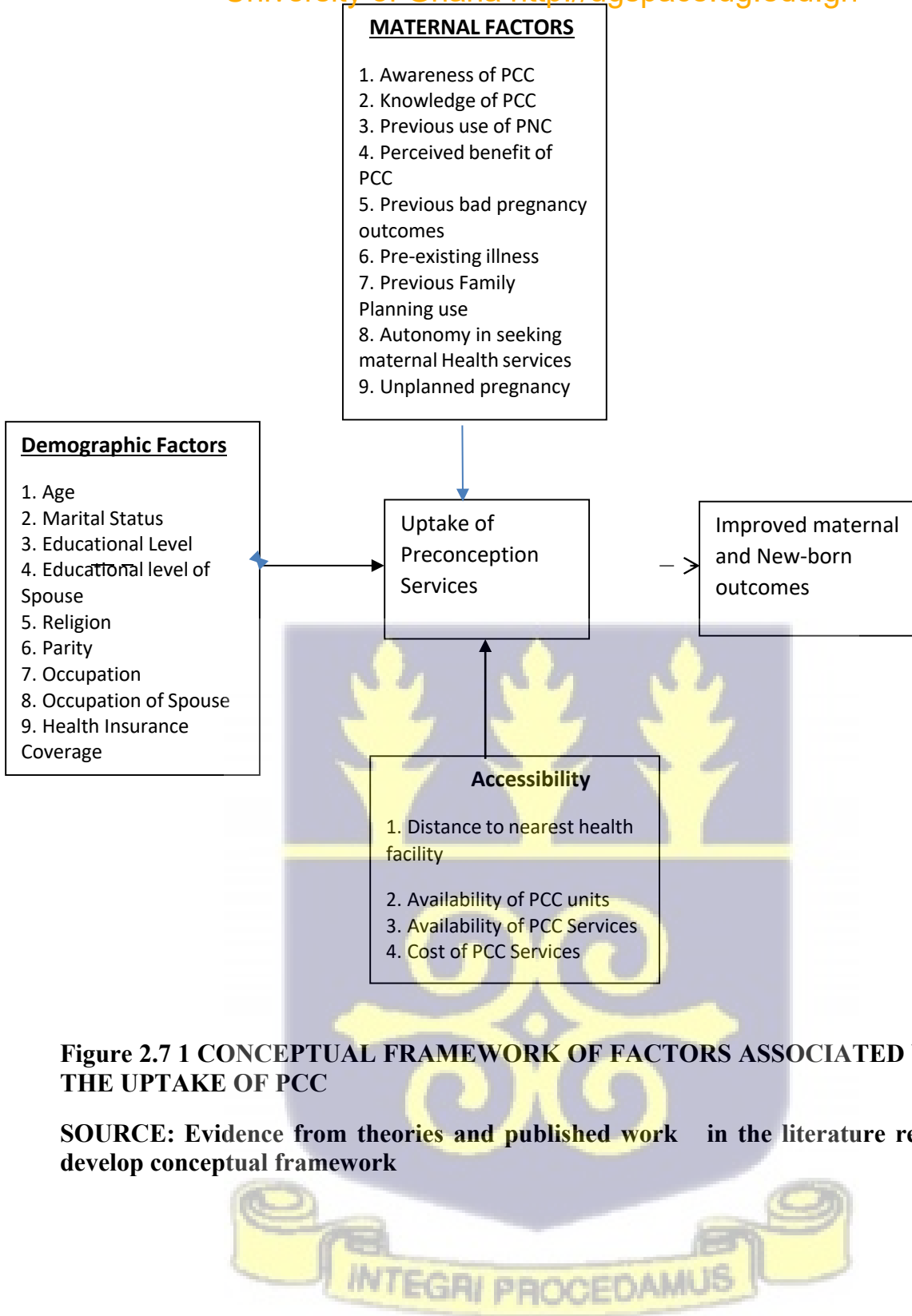


Figure 2.7 1 CONCEPTUAL FRAMEWORK OF FACTORS ASSOCIATED WITH THE UPTAKE OF PCC

SOURCE: Evidence from theories and published work in the literature reviewed were used to develop conceptual framework

2.7 NARRATIVE ON THE CONCEPTUAL FRAMEWORK

This framework seeks to show the factors that are associated with the uptake of preconception care services, and also that preconception care uptake is linked to improved maternal and newborn outcomes. For the purpose of this study I am concentrating on the factors associated with the uptake and not on the outcomes in terms of maternal and newborn morbidity and mortality. Preconception care contributes immensely to improved pregnancy outcomes for both the mother and her newborn (Dean et al., 2013). Higher educational status, and older age were associated with a good knowledge in PCC which is also associated with increased uptake of PCC (Ayalew et al., 2017). Lack of awareness, and knowledge, as well as lack of appreciation of perceived benefits of PCC have associations with uptake of PCC services (Care et al., 2015)

Availability of PCC Units in the hospital, maternal autonomy to seek maternal health care, and previous bad pregnancy outcome are positively associated with uptake of PCC services. A woman's level of education was also positively associated with her autonomy to seek PCC services (Habte et al., 2021). The distance from their household to the health facility for PCC services was a key factor in the uptake of PCC services (Habte et al., 2021). History of family planning use and previous bad pregnancy outcome associated positively with PCC knowledge and uptake. The occupational status of women was also associated positively with PCC knowledge and uptake. Low socioeconomic status is negatively associated with the uptake of PCC (Access, 2020).



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the methods and procedures used in this study. It includes the study design and study location, study population, sample size calculation and sampling techniques. It also includes data collection techniques and tools, ethical consideration and data processing and analysis.

3.1 Study design

This study is a cross-sectional study using quantitative methods which examine factors associated with the uptake of preconception care services in the Tarkwa Nsuaem municipality. A cross-sectional study was appropriate because it measured both outcome (uptake of preconception services) and exposure (socio-demographic characteristics, knowledge on preconception services, etc) information at the same time.

The limitation of this design is that it cannot make a causal inference and cannot also measure incidence.

3.2 Study location

The study was conducted in the Tarkwa-Nsuaem Municipality. It is one of the municipalities in the Western Region of Ghana with Tarkwa being its administrative capital. The municipality shares boundaries with Prestea Huni-Valley to the north, Nzema East Municipality to the west, Ahanta West District to the south and Mpohor District to the East. According to the 2010 population and housing census, the total population of the municipality is 90,477 comprising females (48.4%) and males (51.6% male). The general fertility rate is 99.7 births per 1000 women aged 15-49 years which is the second highest for the region (Ghana Statistical Service, 2014). The municipality is divided into 9 homogenous sub-municipalities and has 2 public hospitals, 5 private hospitals, and a number of clinics, health centres and CHPS compounds

spread within the sub districts. The 2 public hospitals serve as the main referral hospitals, receiving referrals from the other hospitals, clinics, health centres and CHPS compounds. Some of the private hospitals are affiliated to mining companies and provide services to the employees and their dependents. The municipality is endowed with some specialists including Paediatrician, Obstetrician and Gynaecologists, General Surgeon, and Ophthalmologist providing services in their respective specialties. The municipality again has a number of general practitioners, physician assistants, midwives, general nurses, and a host of other health and support service staff providing a wide range of services to the people of the municipality. The CHPS compounds are mostly the first point of call for the majority of the rural communities, and mainly undertake preventive and promotive health services.

Preconception care services are provided to some extent at every level within the municipality with referral from lower centres to higher centres for services not available at the lower centres. It has been incorporated into the maternal health and outpatient services with various components of the care rendered to patients at different times. Patients can walk in and demand for the services or clinicians take opportunity to offer services when patients present with other general complaints.

The number of females with diabetes and hypertension is increasing within the municipality with 577 female diabetic patients in 2019 increasing to 1148 in 2021, and 3083 cases of hypertension in 2019 to 3837 in 2021 (DHIMS). Stillbirth rate is also showing an increasing trend from 15 per 1000 live births in 2019 to 17 per 1000 live births in 2020. Perinatal deaths also increased from 30 per 1000 live births to 31 per 1000 live births (DHIMS). Maternal mortality ratio is also showing an increasing trend from 125 per 100,000 live births in 2019 to 139 per 100,000 live births in 2020 (DHIMS). The percentage of pregnant women with syphilis also saw an increase from 4.15% in 2019 to 5.13% in 2020. The percentage of pregnant women who tested positive for HIV in the prevention of mother to child (PMTCT) programme increased from 1.42% in 2019 to 2.71% in 2020. Again, data also shows that 45% of pregnant women in 2019 and 40% in 2020 booked for antenatal care in the second and third trimester at which point the opportunity for early interventions would be lost.

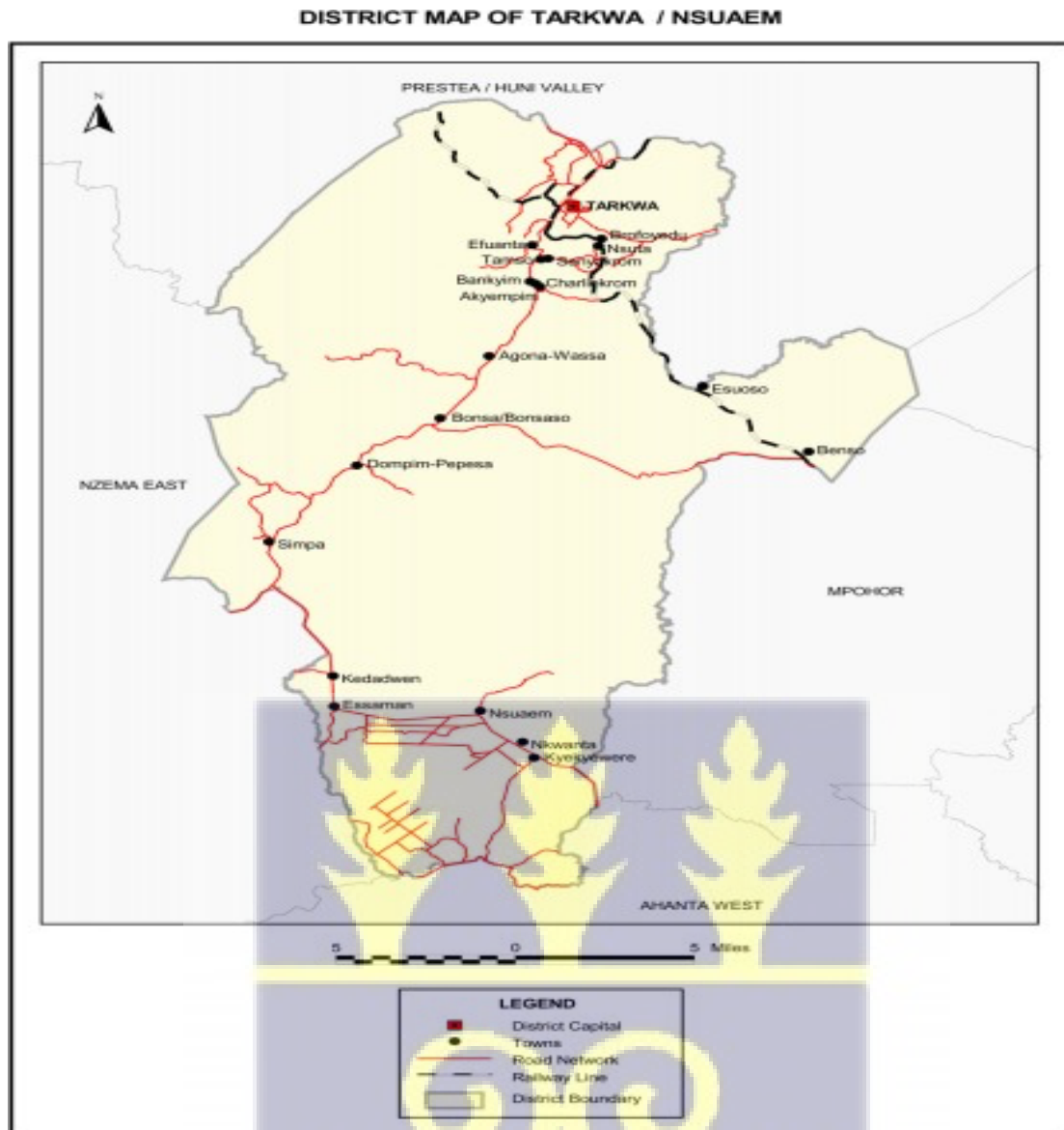


Figure 3.2 1 Map of Tarkwa Nsuaem Municipality (Ghana Statistical Service, 2014).

3.3 Study population

The study population comprised reproductive aged women residing in the Tarkwa Nsuaem municipality

3.4 Inclusion criteria

- Females within the reproductive ages of 15-49 years with at least one previous delivery who have resided for at least six months in the municipality were eligible for inclusion.

3.5 Exclusion criteria

- Females within the reproductive age who are extremely ill were excluded
- Reproductive aged females who did not consent were excluded.

3.6 Sample size calculation

In the absence of any empirical evidence on the uptake of preconception services in the Tarkwa Nsuaem Municipality, a prevalence of 14.5% from an Ethiopian study (Fekene et al., 2020b) was used. The sample size of the study was calculated at 95% confidence level using a formula by Cochran. The formula is given by:

$$n = \frac{Z^2 pq}{e^2} \text{ (Cochran, 1977)}$$

Where:

- n= required sample size
- Z^2 = standard normal deviate for two tailed-test based on 95% confidence level = 1.96
- p= uptake of preconception services = 14.5 % = 0.145
- q=1-p= non-uptake of preconception services = 1-0.145 = 0.855
- e= margin of error = 5% = 0.05
- Therefore, the sample size will be calculated as follows

$$N = \frac{1.96^2 \times 0.145 (1-0.145)}{0.05^2}$$

- $N = \frac{3.8416 \times 0.145 \times 0.855}{0.0025}$

- $N = \frac{0.4673}{0.0025}$

- $N = 190.5 = 191$ participants
- However, to cater for non-response rate, rate of 10% was used to upwardly adjust the sample size. Thus, $1.10 \times 191 = 210.1$. Therefore, 211 reproductive aged females were surveyed in this study.

3.6.1 Dependent variable

The dependent variable for this study was uptake of preconception services among females of reproductive age in the Tarkwa-Nsuaem municipality.

3.6.2 Sampling method

This study used quantitative sampling techniques. A list of the 9 sub-municipalities in the area was generated and simple random sampling was used to select two sub-municipalities (Tarkwa and Nsuta). After this, two communities were selected from each selected sub-municipality, thus four communities were used in this study (Bogrekrom, Brahabebome, Akyempim, and Senyakrom). Knowing the population of these communities, proportionate sampling was then used to determine the number of participants to select from each community. Randomizer software, Google Sheets was used to generate randomized codes of individual households and simple random sampling used to select the 211 households to use for the study. In households where more than one reproductive age person qualifies to be included, simple random sampling was used to select one participant.

3.7 Data collection techniques and tool

A structured interview administered questionnaire was used to elicit responses on factors associated with the uptake of preconception services among reproductive aged women in the municipality. The questionnaire comprised of sections which covered socio-demographic information such as age, marital status, religion, occupation, uptake of preconception services, attitude to preconception care as well as knowledge on preconception services. The structured

questionnaire consisted of question items to assess knowledge, uptake and other factors affecting uptake.

Interviews took place in the chosen communities (Bogrekrom, Brahabebome, Senyakrom and Akyempim) in the homes of the respondents, in a quiet location within the home where privacy was ensured and approved by respondents.

3.8 Quality Control of Study

Data quality ensured by pre-testing the questionnaire in one of the communities (New Atuabo) that was not selected for the study. The aim of the pre-test was to avoid misinterpretation and allow for changes to be made to questions if necessary. Furthermore, 3 trained research assistants were used for data collection and were trained a week before the actual data collection to ensure they were familiar with the data collection tool. Double data entry was done after data collection by two different data entry clerks to ensure validity. Also, the data entry template for data entry was carefully coded to avoid errors during the data entry process.

3.9 Dependent and independent variables

3.9.1 Independent variables

These include socio-demographic characteristics, preconception services and knowledge on preconception services.

Variable	Description of variable
Knowledge of preconception care	Knowledge of preconception care services and interventions
Awareness of preconception care services	Respondent's awareness that a service that provides interventions prior to pregnancy exist

Attitude towards preconception care	Positive attitude (3-6), ambivalent (7-11) and negative attitude (12-15)
Previous bad pregnancy outcome	Either a miscarriage, still birth, congenital anomaly or neonatal death
Religion	Respondent's religion; Christian, Islam, Traditionalist or others
Age	Respondent's age in completed years
Marital status	Respondent's marital status; married, single, divorced, widowed, others
Average monthly income	Average income earned monthly in Ghana cedis; >500 Ghc, 501-1000, 1001-1500, >1500 Ghc

3.10 Data Processing and Analysis

3.10.1 Data entry

Data was entered using Microsoft Excel 2016 and exported to Stata 16.0 for analysis (Stata Corporation, Texas, USA).

3.10.2 Data analysis

Data was checked for completeness and consistency and cleaned before analysis. Frequencies and percentages were used to describe categorical variables. For continuous variables, means and standard deviations were calculated. knowledge on preconception care was assessed using 7 questions assessing knowledge by allotting 2 marks for correct response and zero mark for an incorrect or "do not know" response with a minimum score of 0 and maximum score of 14.

A score above 7 (50%) was rated as adequate knowledge, whereas a score of 7 or below was rated as inadequate knowledge. Association between dependent variable (uptake of preconception services) and independent variables was determined using Pearson Chi-square. To determine factors associated with uptake of preconception services, multivariate logistic regression models were used. P-values less than 0.05 was considered statistically significant.

3.11 Ethical consideration

This study's protocol was submitted to the Ghana Health Service Ethics Review Committee for ethical clearance with approval number GHS-ERC: 025/11/22.

Administrative approval was also sought from the Tarkwa- Nsuaem Municipal Assembly.

Written informed consent:

This was sought from eligible participants after explaining the following to them:

- 3.11.1 Informing them about all aspects of the study including assessing the knowledge, uptake and factors associated with the uptake of preconception services
- 3.11.2 That the procedure entailed them answering questions from a questionnaire pertaining to the said topic.
- 3.11.3 Hard copy and electronic data have been stored in locked file cabinets which are password protected and accessible and used by only the principal investigator and the supervisor of this study.
- 3.11.4 Privacy was ensured during the interviews, and privacy of the information collected by not disclosing such information to any unauthorized person.
- 3.11.5 Confidentiality was assured as data collected was coded to hide identity of respondents and securely kept under lock and key with only the principal investigator having access.
- 3.11.6 The principal investigator declared no conflict of interest in this study.
- 3.11.7 The principal investigator solely funded this study from his own resources.

- 3.11.8 Outcome/ Feedback: Data was analysed, discussed and recommendations made and report sent to University of Ghana School of Public Health for the award of the Master of Public Health degree. Feedback on findings was communicated to study participants through telephone calls.
- 3.11.9 Sharing of participants Information/ Data: Principal Investigator owns the information collected and shared it with University of Ghana School of Public Health.
- 3.11.10 Provision of information and consent for participants: A copy of the Information sheet and Consent form was given to respondents to keep after signing or thumb printing.
- 3.11.11 That participation was voluntary, and respondents made to know could withdraw from the study at any time without any consequences to them.
- 3.11.12 Participants were informed this study has minimal risk in terms of harm, discomfort, emotional or psychological stress to participants.
- 3.11.13 Participants were made aware this study had no direct benefit to them but findings may be used to improve maternal and child care.
- 3.11.14 Participants were appreciated with a bottle of malt and cream cracker biscuit after completing the questionnaire
- 3.11.15 Contact numbers of the principal investigator and ethics review committee secretary were given to participants to call in case of any challenges.

3.12 Outcome and Feedback

The level of knowledge and, uptake of preconception services has been determined as well as the factor associated with uptake. The results of the study have been submitted in a dissertation for the award of MPH degree at School of Public Health. There will be dissemination of the findings of this study to the Tarkwa-Nsuaem Municipal Assembly, and many officials will be invited including the municipal chief executive, municipal health director, and heads of health facilities within the municipalities.

3.13 This study has some limitations

1. Some participants may have given inaccurate information in trying to recollect events leading to recall bias.
2. Some participants may have given responses they thought are socially acceptable but not the actual situation on the ground resulting in social desirability bias.

The limitation of this design is that it cannot make a causal inference and cannot also measure incidence.



CHAPTER FOUR

RESULTS

4.0 Background characteristics of women

In all, 300 women were approached, and 290 consented to be included in the study but 281 women were finally included in the analysis as nine questionnaires were incompletely filled and so were rejected. Although the sample size estimated was 211, after collecting all the questionnaires from the three research assistants, I had 281 fully completed questionnaires and included all in the analysis as this will not adversely affect the findings of the research study.

Table 4.1 summarizes the background characteristics of women. About half 154 (54.8%) were aged 25 – 34 years with a mean age of 34.11 years with standard deviation of 1.08 and a median age of 32.45 years. Further, majority 251 (89.3%) were married at the time of the study and 30 (10.7%) were single. Majority belong to the Christian religion 253 (90%) and Akan tribe 209 (74.4%). Most 172 (61.2%) were self-employed. Few were unemployed 10 (3.6%), government employed 43 (15.3%), private employed 45 (16%) and students 11 (3.9%). About half 154 (54.8%) had senior high education at the time of the study. Majority 272 (96%) had active health insurance. Seeking partners permission before seeking health was predominate among 20% of the women and most 102 (36.3%) of the women earns between GHS 500 – 1000 monthly. Of the 251 married women, majority 189 (72.9%) have partners with tertiary level of education and about half 128 (51%) were private employed (Table 4.1)

Table 4.1 Background characteristics of women

Characteristics	Frequency N = 281	Percentage (%)
Age group		
15 – 24	13	4.6
25 – 34	154	54.8
35 – 49	114	40.6
Marital status		

Single	30	10.7
Married	251	89.3
Religion		
Christian	253	90.0
Muslim	28	10.0
Ethnicity		
Akan	209	74.4
Ewe	24	8.5
Ga/Dangme	4	1.4
Gurunsi/Gurma	4	1.4
Guan	19	6.8
Mole-Dangbani	14	5.0
* Others	7	2.5
Occupation		
Unemployed	10	3.6
Government employed	43	15.3
Private employed	45	16.0
Self-employed	172	61.2
Student	11	3.9
Level of education		
No formal education	8	2.8
Primary	14	5.0
High school	154	54.8
Tertiary	105	37.4
Active health insurance		
No	9	3.2
Yes	272	96.0
Partner permission to health facility		
No	223	79.4
Yes	58	20.6
Monthly income		
<500	100	35.6
500 - 1000	102	36.3
1001 – 1500	51	18.2
>1500	28	10.0
+Level of education of partner (N = 251)		
No formal education	1	0.4
Primary	7	2.8
High school	60	23.9
Tertiary	183	72.9
Occupation of partner		
Unemployed	2	0.8
Government employed	75	29.9
Private employed	128	51.0
Self-employed	46	18.3
Student	2	0.8

*others: Yoruba 5, Igbo- 2 (all originating from Nigeria)

+ level of education of partner : 30 respondents were single or had no partners

4.1 Obstetric and reproductive health characteristics

About half 142 (50.5%) of the women were multiparous and 190 (68.3%) ever used family planning methods. With regards to ANC, majority 274 (97.5%) attended at least one ANC visit in their previous pregnancy and 265 (94.3%) attended at least one or two PNC visit after their last delivery. Majority 276 (98.2%) of the women delivered at the health facility. With regards to previous adverse pregnancy outcome 52 (18.5%) of the women had history of miscarriage and 11 (3.9%) had history of still birth (Table 4.2)

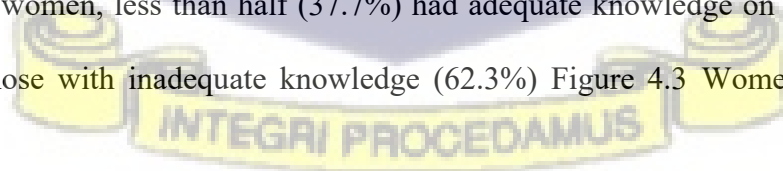


Table 4.2 1 Obstetric and reproductive health characteristics of reproductive age women

Characteristics	Frequency N = 281	Percentage (%)
Parity		
Primipara (one delivery)	139	49.5
Multiparous (≥2 deliveries)	142	50.5
Number of life births		
0	2	0.7
1	56	19.9
2	69	24.6
3+	154	54.8
History of miscarriage		
No	229	81.5
Yes	52	18.5
History of still births		
No	270	96.1
Yes	11	3.9
Attended ANC during previous pregnancies		
No	7	2.5
Yes	274	97.5
Given birth in health facility		
No	5	1.8
Yes	276	98.2
Utilized PNC services		
No	16	5.7
Yes	265	94.3
Ever used family planning		
No	91	32.4
Yes	190	67.6

4.2 Overall knowledge on preconception care

Out of the 281 women, less than half (37.7%) had adequate knowledge on preconception as compared to those with inadequate knowledge (62.3%) Figure 4.3 Women with adequate



knowledge are those that got more than 50% of the knowledge questions correct, while those with inadequate knowledge scored 50% or less.

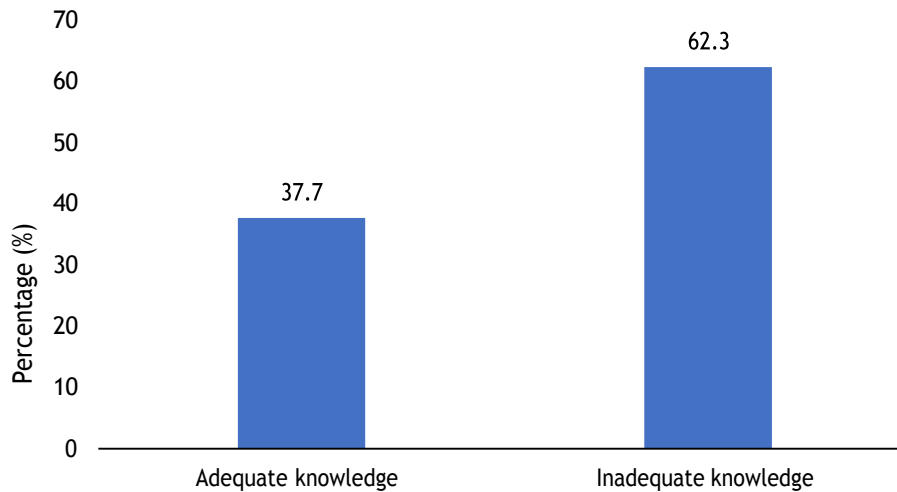


Figure 4.3 1 Knowledge on preconception care

4.3 Knowledge on preconception care

Majority 203 (72.2%) have heard of preconception care. However, about half 166 (59.1%) were not aware that, preconception care is given to women/couples before pregnancy to improve outcomes. Also, few respondents 112 (39.9%) were aware that preconception care is beneficial to both mother and baby. Further, majority were not aware that the following are components of preconception care; family planning services during the preconception period 194 (69%), vaccination against certain diseases before a woman conceives (66.2%), taking folic acid before conception 160 (56.9%), counselling a woman and screening for genetic diseases such as sickle cell anaemia before conception 167 (59.4%) and counselling a woman to avoid hazardous environments (eg. radiation, air pollution) before pregnancy 167 (59.4%) (Table 4.4).

Table 4.4 1 Knowledge of preconception care components among reproductive age women

Characteristics	Frequency N = 281	Percentage (%)
Preconception care is care given to women/couples before pregnancy to improve outcomes		
No	7	2.5
Yes	108	38.4
Don't know	166	59.1
Preconception care beneficial to both mother and baby		
No	4	1.4
Yes	112	39.9
Don't know	165	58.7
Family planning services during the preconception period is part of PCC		
No	42	15.0
Yes	45	15.0
Don't know	194	69.0
Vaccination against certain diseases before a woman conceives is part of PCC		
No	15	5.3
Yes	80	28.5
Don't know	186	66.2
Taking folic acid before conception is part of PCC		
No	12	38.3
Yes	109	38.8
Don't know	160	56.9
Counselling a woman and screening for genetic diseases such as sickle cell anaemia before conception is part of PCC		
No	10	3.6
Yes	104	37.0
Don't know	167	59.4
Counselling a woman to avoid hazardous environments (eg radiation, air pollution) before pregnancy is part of PCC		
No	10	3.6
Yes	104	37.0
Don't know	167	59.4



4.4 Utilization of Preconception care services

In general, the uptake of preconception care (utilization) was low (17.4%), meaning only 17.4% of the respondents admitted to using one or more of the components of preconception care.

Majority 82.6% did not utilize preconception care services (Figure 4.5).

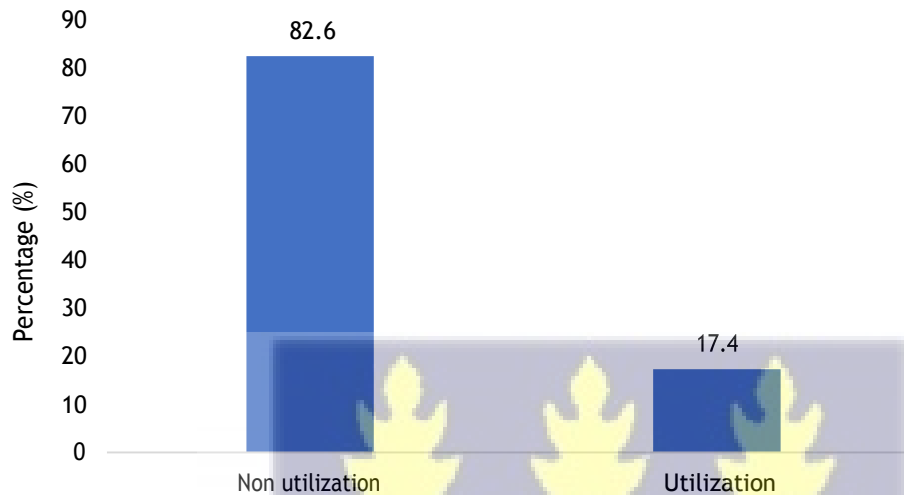


Figure 4.1 1 Utilization of preconception care services

4.5 Preconception care component utilization

Concerning the component of preconception care, women utilized some components more relative to the others, the most repeatedly used components were immunization against tetanus 39 (79.6%), weight management 39 (79.6%) and avoiding any substances harmful to the baby 40 (81.6%). The least reported components were family planning 15 (30.6%) and screening for Epilepsy 1 (2%), Syphilis and Asthma 12 (24.5%) and Tuberculosis 16 (16.3%).

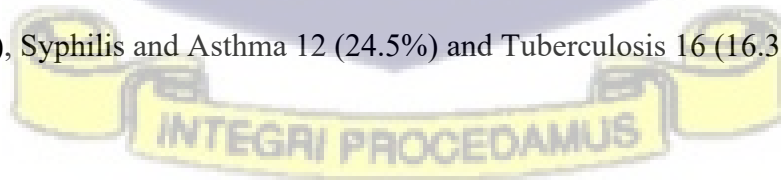


Table 4.6.1 Factors associated with women's uptake of preconception care

Variable	Total n=281	Uptake of preconception care		X ²	p-value
		Non-utilization n=232	Utilization n=49		
Age group				4.185	0.123
15-24	13(4.6)	9(3.9)	4(8.2)		
25-34	154(54.8)	133(57.3)	21(42.9)		
35-49	114(40.6)	90(38.8)	24(49.0)		
Marital status				5.894	0.015*
Single	30(10.7)	20(8.6)	10(20.4)		
Married	251(89.3)	212(91.4)	39(79.6)		
Religion				0.344	0.558
Christian	253(90.0)	210(90.5)	43(87.8)		
Muslim	28(10.0)	22(9.5)	6(12.2)		
Ethnicity				12.043	0.061
Akan	209(74.4)	173(74.6)	36(73.5)		
Ewe	24(8.5)	17(7.3)	7(14.3)		
Ga/Dangme	4(1.4)	4(1.7)	0(0.0)		
Gross/Gurma	4(1.4)	3(1.3)	1(2.0)		
Guan	19(6.8)	19(8.2)	0(0.0)		
Mole-Dangbani	14(5.0)	9(3.9)	5(10.2)		
Others	7(2.5)	7(3.0)	0(0.0)		
Occupation				5.394	0.249
Unemployed	10(3.6)	6(2.6)	4(8.2)		
Government employed	43(15.3)	34(14.7)	9(18.4)		
Private employed	45(16.0)	38(16.4)	7(14.3)		
Self-employed	172(61.2)	146(62.9)	26(53.1)		

Student	11(3.9)	8(3.4)	3(6.1)	
Level of education			5.966	0.113
No formal education	8(2.8)	5(2.2)	3(6.1)	
Primary	14(5.0)	11(4.7)	3(6.1)	
Secondary	154(54.8)	134(57.8)	20(40.8)	
Tertiary	105(37.4)	82(35.3)	23(46.9)	
Active health insurance			0.258	0.611
No	9(3.2)	8(3.4)	1(2.0)	
Yes	272(96.8)	224(96.6)	48(98.0)	
Partner permission to a health facility			3.603	0.058
No	223(79.4)	189(81.5)	34(69.4)	
Yes	58(20.6)	43(18.5)	15(30.6)	
Monthly income			10.333	0.016*
< 500	100(35.6)	83(35.8)	17(34.7)	
500-1000	102(36.3)	92(39.7)	10(20.4)	
1001-1500	51(18.1)	36(15.5)	15(30.6)	
> 1500	28(10.0)	21(9.1)	7(14.3)	
Parity			13.679	<0.001*
Primipara	139(49.5)	103(44.4)	36(73.5)	
Multipara	142(50.5)	129(55.6)	13(26.5)	
Number of live births			9.791	0.020*
0	2(0.7)	2(0.9)	0(0.0)	
1	56(19.9)	39(16.8)	17(34.7)	
2	69(24.6)	56(24.1)	13(26.5)	
3+	154(54.8)	135(58.2)	19(38.8)	
History of miscarriage			0.142	0.706
No	229(81.5)	190(81.9)	39(79.6)	
Yes	52(18.5)	42(18.1)	10(20.4)	
History of stillbirths			0.769	0.380
No	270(96.1)	224(96.6)	46(93.9)	

Yes	11(3.9)	8(3.4)	3(6.1)	
ANC at previous pregnancies			1.516	0.218
No	7(2.5)	7(3.0)	0(0.0)	
Yes	274(97.5)	225(97.0)	49(100.0)	
Given birth in a health facility			0.023	0.879
No	5(1.8)	4(1.7)	1(2.0)	
Yes	276(98.2)	228(98.3)	48(98.0)	
Utilized PNC services			3.583	0.058
No	16(5.7)	16(6.9)	0(0.0)	
Yes	265(94.3)	216(93.1)	49(100.0)	
Knowledge on PCC			32.164	<0.001*
Adequate	106(37.7)	105(45.3)	1(2.0)	
Inadequate	175(62.3)	127(54.7)	48(98.0)	

Data are presented as the frequency with the corresponding percentage in parentheses.

*Significant at $p < 0.05$

Logistic regression of factors associated with women's uptake of preconception care

This study showed that women who had inadequate knowledge about preconception care were 0.02 times less likely to utilize preconception care compared to those with adequate knowledge (AOR = 0.02; 95% CI (0.00, 0.19); $p < 0.001$).



Table 4.7. 1 Preconception care component utilization among reproductive age women

Characteristics	Frequency N = 49	Percentage (%)
Manage weight before pregnancy No	10	20.4



Yes	39	79.6
Avoid taking any substances harmful to the baby		
No	9	18.4
Yes	40	81.6
Avoid environments that are harmful to the baby		
No	23	46.9
Yes	26	53.1
Ever been on any family planning method		
No	34	69.4
Yes	15	30.6
Immunized against tetanus		
No	10	20.4
Yes	39	79.6
Screened for any medical condition		
No	28	57.1
Yes	21	42.9
Last pregnancy planned		
No	11	22.4
Yes	38	77.6
Take folic acid		
No	31	63.3
Yes	18	36.7
Screened for STI		
No	17	34.7
Yes	32	65.3
Screened for any medical condition during the preconception period (multiple responses allowed)		
Blood pressure	14	28.6
Diabetes	17	34.7
Tuberculosis	8	16.3
Syphilis	12	24.5
Anaemia	18	36.7
Asthma	12	24.5
Epilepsy	1	2.0
Hepatitis	30	61.2

4.0 Factors associated with women's uptake of preconception care

The analysis showed that knowledge of preconception care was significantly associated with women's uptake of preconception care ($p < 0.05$).

Table 4.8 1 Logistic regression of factors associated with women’s uptake of preconception care

Variable	Uptake of preconception care		UOR(95% CI), p-value	AOR(95% CI), p-value
	Non-utilization	Utilization		
	n=232	n=49		
Marital status				
Single	20(8.6)	10(20.4)	2.72(1.18, 6.25), 0.019*	2.30(0.87, 6.12), 0.094
Married	212(91.4)	39(79.6)	1	1
Monthly income				
< 500	83(35.8)	17(34.7)	0.61(0.23, 1.67), 0.341	1.07(0.37, 3.15), 0.897
500-1000	92(39.7)	10(20.4)	0.33(0.11, 0.96), 0.041*	0.48(0.15, 1.54), 0.218
1001-1500	36(15.5)	15(30.6)	1.25(0.44, 3.56), 0.676	1.28(0.43, 3.84), 0.660
> 1500	21(9.1)	7(14.3)	1	1
Parity				
Primipara	103(44.4)	36(73.5)	3.47(1.75, 6.88), <0.001*	0.72(0.32, 1.63), 0.429
Multipara	129(55.6)	13(26.5)	1	1
Number of life births				
0	2(0.9)	0(0.0)	-	-
1	39(16.8)	17(34.7)	3.10(1.47, 6.52), 0.003*	1.25(0.53, 2.92), 0.612
2	56(24.1)	13(26.5)	1.65(0.76, 3.57), 0.203	0.81(0.34, 1.90), 0.626
3+	135(58.2)	19(38.8)	1	1
Knowledge on PCC				
Inadequate	105(45.3)	1(2.0)	0.03(0.00, 0.19), <0.001*	0.02(0.00, 0.19), <0.001*
Adequate	127(54.7)	48(98.0)	1	1

Data are presented as the frequency with the corresponding percentage in parentheses. UOR- unadjusted odds ratio; AOR- adjusted odds ratio; CI- confident interval; *Significant at p <0.05

CHAPTER FIVE

5.0 DISCUSSION

5.1 Uptake of Preconception Care Services

This study assessed the level of knowledge of reproductive age women on preconception care, the uptake and the factors associated with the uptake of preconception care services. The study revealed that about 40% of respondents had adequate knowledge, with only one out of five women utilizing preconception services. The analysis showed that knowledge of preconception care was significantly associated with women's uptake of preconception care ($p < 0.05$). Women who had inadequate knowledge about preconception care were 0.02 times less likely to utilize preconception care than those with adequate knowledge [(AOR) = 0.02; 95% (0.00, 0.19); $p < 0.001$].

Although majority, about 70% of the respondents were aware of preconception care, overall uptake of preconception care in this study was found to be low (17.4%). A study by Boakye-Yiadom et al at the Tamale West Hospital of Ghana also found a low level of uptake (15%) of preconception care services.(Boakye-Yiadom et al., 2020). Another study by Olowokereet. al in Nigeria corroborated this study with a finding of low uptake of preconception care services (34.1%), although the uptake was much higher than this study's uptake. (Olowokere,AE. Komolafe, A. Owofadeju, 2015). This may be due to the different settings in which the studies were done, health facility setting as against a community study in this current study. This may be attributed to the fact that a sample of people attending hospital may present some bias compared to sampling a whole community. People attending hospital may have had opportunity to be educated on preconception care or offered some preconception care services in the process. Demisse et al. in 2019 also reported poor utilization (13.4%)of preconception care services intheir study in Ethiopia (Demisse et al., 2019). This uptake is slightly lower than

the uptake found in this study and may be due to differences in study design, and sample size.

They used a mixed method cross-sectional study with a sample size of 424.

Again, the proportion of women who were found to utilize preconception care services in this study was significantly higher (17.4%) than findings from a study conducted in Sudan (9%) among reproductive age women with Rheumatic heart disease (Khalid et al., 2015), and in a study conducted among Brazilian women (15.9%) to evaluate preconception health behaviors associated with their pregnancy planning status (Ana-Luiza & Osmary, 2016). The variances in these findings can be attributed to the differences in study settings (hospital based), and study population. Further, whereas Khalid et al. (2015) conducted their study among a population of women with rheumatic heart disease, this study did not consider any underlying health conditions of the women involved. Another study by Du et al. in China found an uptake of 42.2% which is higher than what this study found (Du et al., 2021). Differences in study location, and participants may account for the variation. Their study was hospital based and participants were only pregnant women.

In determining the utilization of preconception care components, the findings of this study discovered the most utilized components being immunization against tetanus, weight management, and avoiding substances harmful to the baby and the least utilized component being family planning and screening for Syphilis, Epilepsy and Tuberculosis. This contrasts with, a study conducted in Sudan, Alsammani, Kunq and Adam (2017) reported the most utilized to be folic acid supplementation, especially among women who had received some level of formal education (Alsammani et al., 2017). Contrary to this current study, Demisse et al. (2019) in their study evaluated utilization of immunization, folate supplementation, HIV testing and screening, STI screening and treatment, as well as lifestyle modifications in determining utilization of preconception care services among women of reproductive age in Ethiopia. The study found HIV counselling and testing as the most utilized preconception care component (Demisse et al., 2019). These variations may be due to differences in study setting, culture and emphasis of the various healthcare systems. It is noteworthy that these components of preconception care are necessary to ensure optimal health of both mothers and their babies (Ayalew et al., 2017). In the ideal scenario, all components of preconception care should be utilized equally. Thus the findings of this study

showing that some components are patronized more than others, implies that policies and activities should be geared towards exposing women to all the components of preconception care.

5.2 Factors Associated with Uptake of Preconception Care Services

In this study various factors were studied to determine any association with the uptake of preconception care including age of respondents, marital status, educational level, knowledge on preconception care, religion, occupation, ethnicity, income level, active health insurance cover, partner permission prior to visiting health facility, parity, history of miscarriage or stillbirths, number of live births, ANC attendance during previous pregnancy, childbirth in health facility and previous utilization of PNC services. The analysis showed that knowledge of preconception care was significantly associated with women's uptake of preconception care ($p < 0.05$).

Furthermore, this study found that women with inadequate knowledge on preconception care were 0.02 times less likely to utilize preconception care compared to those with adequate knowledge. A systematic review and meta-analysis done in sub-Saharan Africa to determine the association between preconception care utilization and knowledge level among reproductive age women, reported similar findings, indicating adequate knowledge of preconception care to influence mothers' utilization of preconception care services. According to the findings of this study, women with good knowledge level of preconception care were two times more likely to utilize preconception care compared to women with poor knowledge (Woldeyohannes et al., 2021). Another systematic review and meta-analysis from Ethiopia again corroborated this finding, showing that level of knowledge of preconception care was positively associated with uptake of preconception care services (Ayele et al., 2021). This has been attributed to the fact that women who had received some form of education are more likely to be motivated to know about their health and will be exposed to preconception care (Ayalew et al., 2017). Ayele et al. (2021) reported that knowledge of preconception care services enhanced the likelihood of mothers seeking the services at a health care facility.

5.3 Knowledge on Preconception Care Services

From the findings of this study, it was observed that although majority of the respondents had heard about preconception care, overall knowledge was found to be inadequate, with only 37.7% of respondents having adequate knowledge. This was evident in the majority of the respondents not having knowledge of preconception care as being beneficial to both mother and baby, and counselling, family planning, vaccination and folic acid supplementation as being components of preconception care services. The reason for these findings is unclear, as most of the respondents indicated attending ANC and PNC during their previous pregnancies, and childbirths, and should have benefited from some education including preconception care topics. It could also be the case that health care providers are not giving effective education and counselling, or are not touching on preconception care during health education at ANC, PNC or at the general outpatient units. A study by Demisse et. al in Ethiopia found an even lower level of knowledge among reproductive age women with only 17.3% of respondents having adequate knowledge (Demisse et al., 2019). Again, another study by Boakye-Yiadom et. al in Tamale, Ghana also found a lower percentage of women with good knowledge (23.5%) on preconception care services (Boakye-Yiadom et al., 2020). This may be due to differences in educational level of respondents in both studies, with 92.2% of respondents in current study having at least a secondary education compared to 80% in the study by Boakye- Yiadom et. al. Furthermore 11% of respondents had no formal education compared to 2.8% in this current study.



CHAPTER SIX

6.0 CONCLUSION

The findings from this study showed low uptake and low level of knowledge of preconception care services. Adequate knowledge of preconception care services was found to be a factor that was significantly associated with utilization of preconception care services. The most utilized preconception care components are immunization against tetanus, weight management and avoiding substances harmful to the baby, and the least utilized being family planning and screening for syphilis, epilepsy and tuberculosis.

6.1 RECOMMENDATIONS

- There is the need for the Tarkwa-Nsuaem municipal health directorate and its public health personnel to intensify education on preconception care through health talks on radio, community durbars, churches and health facilities to improve the knowledge of women and couples within the municipality.
- Furthermore, to improve the uptake of preconception services, the municipal health directorate and health facility heads should integrate these services into other maternal health services and general medical care at all levels of healthcare such that women who present themselves for such services will simultaneously access preconception care, or some aspects of it in the process. There should be sensitization and training of healthcare staff including doctors, midwives, general nurses, community health nurses, and laboratory staff, and provision of logistics. There should also be policies and clear guidelines to enhance this integration.
- Healthcare staff including doctors, nurses, and community health nurses must step up education of these women on all the components of preconception care, stressing on the least utilized components such as family planning, and the benefits of preconception care.

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APPENDIX I: PARTICIPANT INFORMATION SHEET

Title of Study: Factors associated with the Uptake of Preconception services among women in fertility age (WIFA) within the Tarkwa-Nsuaem Municipality

Introduction: I am Frank Baidoe-Ansah, pursuing a Master of Public Health, at the University of Ghana School of Public Health. Below is my personal details for which participants can reach me for any clarification;

- Address : P .O. Box 355, Tarkwa**
- Telephone number : 0244711481**
- Email: abeikuus@yahoo.com**

Background and Purpose of research: Preconception services are interventions given to women or couples before pregnancy with the aim of optimizing their health before pregnancy to ensure good outcomes for the mother and her child. Preconception services have the potential to reduce adverse pregnancy outcomes such as maternal and child deaths. Despite the benefits of preconception care, many women do not access this care with studies showing low uptake of these services. This research is to try and determine the uptake of these services among women in the fertility age within Tarkwa –Nsuaem municipal and the factors associated with the uptake.

Nature of research: This study will determine the level of uptake of preconception services, assess knowledge of preconception services, awareness, attitude and others factors associated with uptake. This study will involve 211 women in fertility age living within the Tarkwa-Nsuaem municipality.

Duration / what is involved: Participants will be required to answer questions from a questionnaire with the help of an interpreter, and this will take about an hour.

Potential Risks: study will cause minimal harm, discomfort, emotional upset, or psychological stress to participants.

Benefits: Participants may not benefit directly but findings from study will help improve maternal and child health outcomes within the municipality.

Costs: Participants will not incur any cost by participating in this study.

Compensation: A bottle of malt and cream cracker biscuits will be given as refreshment to participants after participating.

Confidentiality: Confidentiality is assured as data collected will be coded to hide their identity and securely kept under lock and key with only the principal investigator having access.

Voluntary participation / Withdrawal: Participation in this study is voluntary, and you can withdraw from this study at any time without any consequences to you.

Outcome/ Feedback: Data will be analysed, and discussion and recommendations made and report sent to University of Ghana School of Public Health for the award of the Master of Public Health degree. Feedback on findings will be communicated to study participants through telephone calls.

Funding: Principal Investigator will be funding this study from his own coffers.

Sharing of participants Information/ Data: Principal Investigator will own the information collected and will share with University of Ghana School of Public Health.

Provision of information and consent for participants: A copy of the Information sheet and Consent form will be given to you to keep after signing or thumb printing.

Who to contact for further clarifications/ Questions:

1. Frank Baidoe-Ansah, University of Ghana, School of Public Health.
Phone: 0244711481 email: abeikuus@yahoo.com
2. Nana Abena Apatu, Ghana Health Service (**should be contacted for ethical issues only**)
Phone: 0546158589 email: ethics.research@ghs.gov.gh



APPENDIX II: CONSENT FORM

STUDY TITLE: FACTORS ASSOCIATED WITH THE UPTAKE OF PRECONCEPTION SERVICES AMONG WOMEN IN FERTILITY AGE (WIFA) WITHIN THE TARKWA-NSUAEM MUNICIPALITY

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (.....). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant.....

Participants' SignatureOR Thumb Print.....

Date:.....

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the (.....) language to his proper understanding.

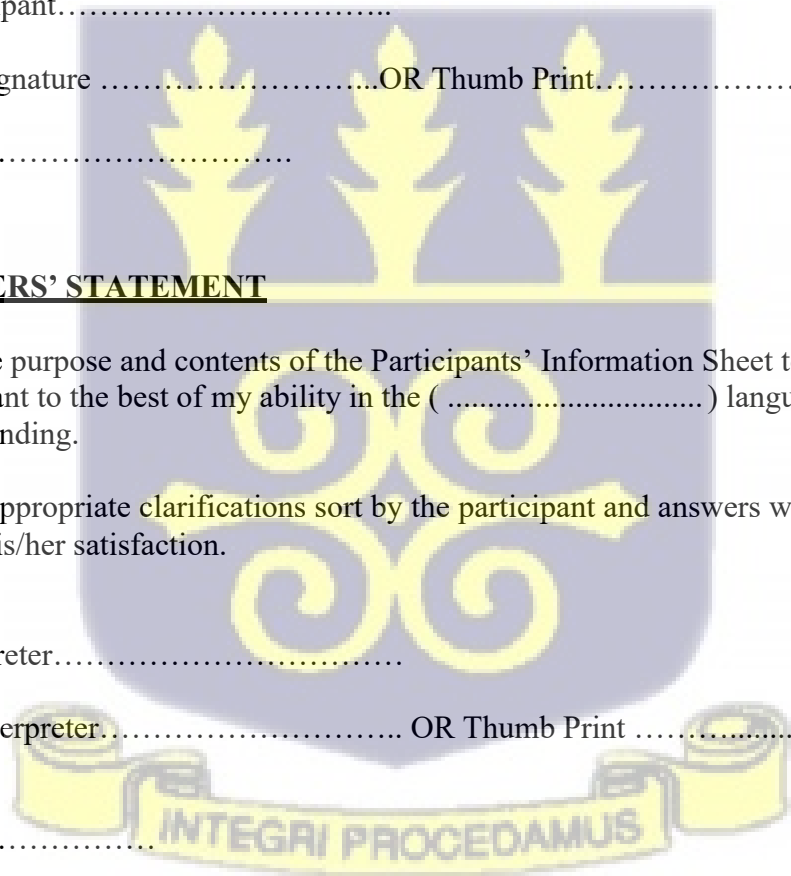
All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter.....

Signature of Interpreter..... OR Thumb Print

Date:.....

Contact Details.....



STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language he/she understood (... ..)

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:.....

Signature..... OR Thumb Print

Date:.....

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name.....

Signature

Date.....



MODULE III



APPENDIX III: DATA COLLECTION TOOL

ID NO:

Part I: Socio -demographic factors

Questions	Responses
1.What is your age in completed years?	
2.What is your marital status?	1. Married 2. Divorced 3. Widowed 4. Other, specify.....
3.What is your religion?	1. Christian 2. Muslim 3.Traditionalist 4. Other, specify.....
4.What is your ethnicity?	1. Akan 2. Ewe 3. Guan 4. Ga/Dangme 5. Mole-Dagbani 6.Grusi/Gurma 7. Others, specify-----
5. What is your occupation?	1.unemployed 2. Student 3. self-employed 4. Private employee 5 Government employee 6. Other, specify.....
6.What is your educational status?	1. No formal school 2. Primary 3. Secondary/ High school 5. Tertiary
7. Average Monthly income	1. <Ghc500. 2. Ghc 501-1000. 3. Ghc 1001-1500 4. >Ghc 1500

Part II: Questions related to past obstetric history / past medical history and social history

8. How many deliveries (pregnancies > 28 weeks)have you ever had (parity)?	In number..... If none, skip to Q 10
9.Number of live births	In number.....
10. Have you ever utilized ANC service for any of your previous pregnancies?	1 Yes 2. No If No, skip to Q12
11.If the answer is yes to QNO 10, how many times did you attend in your last birth?	In number _____
12.Have you ever given birth in a health institution?	1 Yes 2. No
13.If the answer is yes to Q12 where did you give birth to your last child?	1. Health center 2. Hospital 3.CHPS 4.Others, specify.....
14.Have you ever utilized PNC service after childbirth?	1 Yes 2. No
15.Have you ever used family planning before?	1 Yes 2. No
16. Do you have any of the following diseases? You can tick multiple answers.	1. Diabetes Mellitus 2. Hypertension 3.HIV/AIDS 4. STI (specify) 5. Tuberculosis 6. Hypertension

	7. Mental Illness (specify)
17.Are you exposed to any of the following? You can tick multiple answers.	1 Cigarette smoking 2. Alcohol consumption 3. Illicit drugs 4. environmental hazards

Part III: Questions related to Awareness of preconception care

16.Have you ever heard about preconception care (or any care given to women before they get pregnant)?	1 Yes 2. No If No, skip to Q 18																
17.If yes, for Q16, source of information? (Multiple answers are possible)	1. Family/relatives 2. Health institutions 3. Mass media 4. School 5. Other, Specify.....																
Questions related to Knowledge of preconception care services																	
18.Preconception care is care given to women/couples before pregnancy to improve outcomes	1. Yes 2. No 3. Don't Know																
19.Preconception care can be given in-between 2 pregnancies (inter-conception care)	1. Yes 2. No 3. Don't Know																
20.Tick the preconception services you know about	1. Family planning 2. Vaccination (e.g rubella, tetanus) 3. Screening for medical conditions such as Hypertension, Diabetes, etc 4. Counselling against use of substances such as alcohol and cigarettes 5. Lifestyle and nutrition counselling to maintain healthy weight 6. folic acid supplementation 7. Screening for genetic diseases (eg sickle-cell anaemia) 8. Screening for infectious diseases (eg HIV, Syphilis and Gonorrhoea)																
21. Can any of the following affect pregnancy outcome if not managed? Multiple answers are possible	<table border="1"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>Don't Know</th> </tr> </thead> <tbody> <tr> <td>A. Diabetes mellitus</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>B. Epilepsy</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>C. Obesity</td> <td>1</td> <td>2</td> <td>3</td> </tr> </tbody> </table>		Yes	No	Don't Know	A. Diabetes mellitus	1	2	3	B. Epilepsy	1	2	3	C. Obesity	1	2	3
	Yes	No	Don't Know														
A. Diabetes mellitus	1	2	3														
B. Epilepsy	1	2	3														
C. Obesity	1	2	3														

	D. STI, including HIV	1	2	3
	E. Hypertension or heart diseases	1	2	3
	F. Depression	1	2	3
22.Can any of the following affect the pregnancy outcome? Multiple answers are possible	Yes	No	Don't Know	
	A. Cigarette smoking	1	2	3
	B. Alcohol consumption	1	2	3
	C. Exposure to environmental hazardous	1	2	3
	D. Illegal drugs intake	1	2	3
	E. Poor diet	1	2	3
23.Should a woman be on a family planning method during the preconception period?	1 Yes	2. No	3. Don't Know	
24.Should a woman be vaccinated against certain diseases before she conceives?	1 Yes	2. No	3. Don't Know	
25.Should a woman be screened for certain medical conditions before she gets pregnant?	1 Yes	2. No	3. Don't know	
26.Should a woman stop using alcohol, smoking cigarette and illicit drugs before conception?	1 Yes	2. No	3. Don't Know	
27.Should a woman use folic acid before conception?	1 Yes	2. No	3. Don't Know	
28.Should a woman be screened for genetic diseases such as sickle cell anemia before conception?	1 Yes	2. No	3. Don't Know	

29. Should a woman avoid hazardous environments before pregnancy?	1. Yes 2. No 3. Don't Know
30. Should a woman be screened for sexually transmitted diseases before pregnancy	1 Yes 2. No 3. Don't know

Part III: Questions related to uptake of preconception care

31. Did you visit any health institution before pregnancy?	1 Yes 2. No If No, skip to Q 34																																
32. Category of health institution	1 Public hospital 2. Private Hospital 3, Health Centre 4,CHPS compound																																
33.If yes to question number 31, why did you visit health institutions before pregnancy? Multiple answers are possible	<table border="0"> <tr> <td>Yes</td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>A. To take folic acid</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>B. To be screened and treated for chronic Disease</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>C. To be screened for STI</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>D. To get Vaccination</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>E. To receive medical advice prior to pregnancy</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>F. To go for Family planning</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>G. Visit was unrelated to plans for pregnancy</td> <td></td> <td>1</td> <td>2</td> </tr> </table>	Yes	No			A. To take folic acid		1	2	B. To be screened and treated for chronic Disease		1	2	C. To be screened for STI		1	2	D. To get Vaccination		1	2	E. To receive medical advice prior to pregnancy		1	2	F. To go for Family planning		1	2	G. Visit was unrelated to plans for pregnancy		1	2
Yes	No																																
A. To take folic acid		1	2																														
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C. To be screened for STI		1	2																														
D. To get Vaccination		1	2																														
E. To receive medical advice prior to pregnancy		1	2																														
F. To go for Family planning		1	2																														
G. Visit was unrelated to plans for pregnancy		1	2																														
34. Did you try to manage your weight before pregnancy in order to reduce risk in that pregnancy?	1. Yes 2. No																																
35.If yes, for question number 34, how did you manage the weight? Multiple answers are possible	<table border="0"> <tr> <td>Yes</td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>A. Modify diet</td> <td></td> <td>1</td> <td>2</td> </tr> <tr> <td>B. Exercise</td> <td></td> <td>1</td> <td>2</td> </tr> </table>	Yes	No			A. Modify diet		1	2	B. Exercise		1	2																				
Yes	No																																
A. Modify diet		1	2																														
B. Exercise		1	2																														

36. Did you avoid taking any substances that you felt may harm your baby before pregnancy?	1. Yes	2. No
37. If yes, for question number 36, what substances did you avoid? Multiple answers are possible		Yes No N/A
A. Cigarette smoking	1	2 3
B. Alcohol consumption	1	2 3
C. Illicit drugs	1	2 3
D. Medications not prescribed by Health professional	1	2 3
38. Did you try to avoid environments that you felt might harm your baby before pregnancy? Eg smoke, dust, radiation, chemicals etc	1. Yes	2. No
39. If yes, for question number 38, which environments did you try to avoid? Multiple answers are possible	Yes No	
A. environment with Radiation		1 2
B. environment with Chemicals		1 2
C. environment with smoke		1 2
D Others, specify.....		1 2
40. Have you ever been on contraception?	1. Yes	2. No
41. Have you been immunized against tetanus?	1. Yes	2. No. 3. I do not know
42. Have you ever been screened for any medical condition during the preconception period?	1. Yes	2. No
43. If yes, which of the following	<ol style="list-style-type: none"> 1. Blood pressure 2. Diabetes 3. Tuberculosis 4. HIV 5. Syphilis 6. Anaemia 7. Asthma 8. Epilepsy 9. Hepatitis B 	
44. Did you plan your last pregnancy?	1. Yes	2. No

<p>45. Did any of the following hinder or will hinder your ability to access preconception services?</p>	<p>1. Cost of services 1. Yes 2. No</p> <p>2. health facility far from you 1. Yes 2. No</p> <p>3. bad attitude of health staff 1. Yes 2. No</p> <p>4. No designated unit for preconception services 1. Yes 2. No</p> <p>5 No posters, or information on preconception services available at health facility 1. Yes 2 No</p> <p>6. Health facility not having adequate laboratory services 1. Yes, 2. No</p> <p>7. Health facility not having adequate Medications to treat your condition 1. Yes 2. No</p> <p>8. Successful outcomes in previous Pregnancies 1. Yes 2 No</p> <p>9 Bad outcomes in previous pregnancies 1. Yes 2. No</p>
<p>Questions related to attitude towards preconception services</p>	
<p>46. Preconception care is important for every woman who is capable of getting pregnant</p>	<p>1 Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree</p>
<p>47. Preconception care can help improve maternal and child health outcomes</p>	<p>1 Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree</p>
<p>48. I will utilize any opportunity for preconception care services prior to my next pregnancy.</p>	<p>1 Strongly agree 2, Agree 3. Neutral 4 Disagree 5 Strongly Disagree</p>