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AN ASSESSMENT OF FACTORS AFFECTING MODERN CONTRACEPTIVE USE AMONG FEMALES OF REPRODUCTIVE AGE IN ACHIMOTA, GHANA

BY

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DEDICATION

I dedicate my humble effort to my loving parents, Mr. and Mrs. De-Graft Mends, who taught me to believe in the value of hard work and encouraged me to pursue higher education. To my siblings, Alice and Rose, I am grateful for their prayers and support throughout my studies.

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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
CINAHL	Cumulative Index to Nursing and Allied Health Literature
FP	Family Planning
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
HIV	Human Immunodeficiency Virus
IUDs	Intrauterine Devices
LAM	Lactational Amenorrhea Method
LARCs	Long-Acting Reversible Contraceptives
MoD	Mode of Delivery
MS	Microsoft
PPO	Previous Pregnancy Outcome
RIB	Review Board
SDGs	Sustainable Development Goals
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization
WIFA	Women in Fertility Age

ABSTRACT

Background: Globally, an estimated 214 million women have an unmet need for modern contraception, with the highest burden observed in low- and middle-income countries. Insufficient utilization of modern contraceptives contributes to unintended pregnancies, unsafe abortions, and maternal deaths. The use of modern contraceptives has increased globally, from 54% in 1990 to 57% in 2012. Contrariwise, contraceptive rates in Africa have remained consistently low at 23% and 24%, respectively. This study aimed to assess the factors that influenced the use of modern contraceptives among women of reproductive age in Achimota, Ghana.

Methods: This study employed a cross-sectional design. Data were collected using a questionnaire survey of402 female adults aged 15-49 years residing in Achimota. Statistical analysis was done using Statistical Package for the Social Sciences version 27. Descriptive statistics were generated to measure central tendencies and dispersion Inferential analysis was performed using the statistical Package for the Social Sciences version 2. to determine the association between variables. Chi-square and logistic regression were done to find associations. Results were expressed as adjusted odds ratios with 95% confidence intervals.

Results: Results show that socio-demographic and obstetric factors are significantly associated with modern contraception use. The study concludes that the analysis indicates that, compared to women with no formal education (reference group), women with secondary education showed a significant increase in odds (aOR=3.971, 95% CI=1.66-9.52), and those with tertiary education exhibited even higher odds (aOR= 58.657, 95% CI= 19.74-174.34).

Conclusion: These findings highlight the positive association between higher education levels and contraceptive use. Public sensitization is required in the Achimota area to help improve contraceptive use.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Modern contraceptives are essential for the reproductive health and rights of females of reproductive age (Beson et al., 2018). Access to and utilization of modern contraceptive methods not only enable individuals to plan and space their pregnancies but also contribute to reducing maternal and infant mortality rates, promoting gender equality, and enhancing economic development (Dhrifi, 2019). The modern contraceptive method is a product or medical procedure that interferes with reproduction from acts of sexual intercourse (Lopez-del Burgo & de Irala, 2016). Modern contraceptives are essential for reducing unintended pregnancies and improving maternal and child health outcomes. Despite the numerous benefits, modern contraceptive use remains inconsistent among females of reproductive age worldwide (Apanga et al., 2020).

Globally, an estimated 214 million women have an unmet need for modern contraception, with the highest burden observed in low- and middle-income countries (Kantorová et al., 2020). Insufficient access to and utilization of modern contraceptives contribute to unintended pregnancies, unsafe abortions, and maternal deaths (Askew et al., 2017). These consequences are especially prevalent among females of reproductive age, who often face numerous social, economic, cultural, and educational barriers that hinder their ability to make informed choices about contraception (Potasse & Yaya, 2021). Modern contraceptives have increased globally recently, from 54% in 1990 to 57% in 2012 (Bearak et al., 2018). However, the usage rates in Africa have remained consistently low at 23% and 24%, respectively, during the same time frame (Abekah-Nkrumah, 2019). The estimates (16.5%) for Sub-Saharan countries are even lower than these figures (Tsui et al., 2017). This may be due, in part, to inadequate healthcare

infrastructure and transportation facilities (Tsuiet al., 2017). The continuous and elevated level of fertility in Ghana and other countries in Sub-Saharan Africa, combined with a decrease in mortality rates, has resulted in significant and rapid growth in population (Mberu & Ezeh, 2017). This growth has contributed to poverty, environmental degradation, and a declining standard of living for most of the population (Potasse & Yaya, 2021).

Ghana, a country with diverse ethnic and religious groups, has seen an increase in the use of contraceptives due to efforts by the Ghana Health Service (GHS) and other organisations over the past two decades (Sokey et al., 2018). As a result, there has been a steady decrease in the total fertility rate from 1988 to 2014. In 1988, the fertility rate in Ghana was 6.4 births per woman, while in 2014, it was 4.2 births per woman (Klu& Agyekum, 2023). However, there is still a disparity in family planning methods between urban and rural areas and between rich and poor populations (Yigzaw et al., 2015). This puts women in the most disadvantaged settings at a significant disadvantage (Ezeh et al., 2010).Over the past few years in Ghana, there has been an important and documented increase in the number of people using contraceptives (Appiah et al., 2020). Specifically, the number of users in Ghana increased from 234 in 2012 to 612 in 2013 and to 1,035 at the beginning of 2014 (Lotsu, 2016). The recent Ghana Demographic and Health Survey 2014, estimated that 30 % of currently married women have an unmet need for family planning services, with 17% having an unmet need for spacing and 13% having an unmet need for limiting(Guure et al., 2019). In the industrialized world, everyone is familiar with contraceptives, and nearly everyone is in the developing world (Wulifan et al., 2019). The awareness of contraceptive use is highly saturating globally, with sub-Saharan Africa having around 85% knowledge of at least one method (Nanvubya et al., 2020). According to Ehiaghe and Barrow (2022), 41.7% of women of reproductive age receive at least one modern

contraceptive use service from a healthcare professional. However, the low usage of modern contraceptive services raises the possibility that some women are either not consciously planning their pregnancies or are having trouble obtaining this kind of care (Logan et al., 2021).

Further, research reported that 99% of men and women were aware of at least one form of contraception (Hlongwa et al., 2020). The survey also revealed that modern contraception techniques were more widely known among women than traditional ones, with male condoms coming in at 96%, injectables at 92%, and tablets at 91% (Hlongwa et al., 2020). This information, however, varies greatly among several population categories, including age, occupation, religion, and ethnicity (Bhandari et al., 2019). But knowledge does not necessarily translate into usage. Azanaw et al. (2022) reported on global trends in contraception; 63% of women of reproductive age who are married or in a union use a method of contraception. They further indicated that 19% of married or in-union women of reproductive age (15-49 years) use female sterilization as a method of contraception worldwide. The pill (58.8%) is the most commonly used form of contraception, while the IUD is used by 14% of married or in-union women of reproductive age (Tomar et al., 2020).

Research indicated that Ghana was committed to increasing modern contraceptive use among married/in-union women from 22% in 2012 to 30% in 2020 (Guure et al., 2019). According to Ghana Health Service, the rate of contraceptive use (uptake) was 40.50% for the Achimota residents, whose Women in Fertility Age (WIFA) population is 5,486 (24% of the 22,845 general population) (Ghana Health Service Annual Report) (DHIMS2, 2022).

Integrating modern contraceptive and maternity services was a crucial national strategy to accomplish these goals. This strategy includes excellent education during maternity care to enhance access to and adoption of modern contraceptive methods (Loll et al., 2020). Although many Ghanaian women do not employ successful modern contraceptive techniques, they may want to delay their next pregnancy. In 2011, the Ghana Statistical Service found that just 17% of married women or women in relationships between the ages of 15 and 19 years employ contemporary modern contraceptive techniques. In addition, they stated that 38% of women

between the ages of 25 and 39 also utilize some variation of the modern contraceptive approach (Tin et al., 2020). A study on the factors influencing postpartum women's intentions to modern contraceptive use in rural Ghana found that the presence of a male partner, a history of injectable usage, and the acceptability of modern contraceptives to the pregnant woman were all crucial factors in the women's decisions (Bizuneh & amp; Azeze, 2021). Thus, encouraging modern contraceptive methods has become a national health priority.

1.2: Problem Statement

Globally, one of the major public health problems is the inadequate spacing of children (Chattu et al., 2018). Owusu-Aidoo (2019) reported that childbirth within the first two years after delivery is highly risky, and a greater proportion of female adults fail to pay attention to modern contraceptives. Research indicated that the usage of modern contraceptive methods among women remains low despite the unmet need for modern contraceptive methods (Catalao et al., 2020). Hence, there is a breach between effective modern contraceptive methods adaptation and the act of sexual activities leading to pregnancies within a short period. As a result, there is a relative increase in the risk of maternal and neonatal mortality and morbidity in developing countries (Owusu-Aidoo, 2019).

Potential effects of inadequate spacing of children on a mother include physical health, emotional well-being, financial strain, and interpersonal relationships. Effects on a baby include increased risk of prematurity, low birth weight, increased risk of infant mortality, reduced maternal resources, increased risk of sibling rivalry, and reduced access to resources. Furthermore, inadequate spacing of children can affect a community and this includes increased demand for resources, increased poverty, increased demand for social services, decreased community engagement, and increased strain on healthcare resources.

Previous studies have shown some of the factors contributing to low modern contraceptive use to be difficulty in getting modern contraceptive supplies, examples include implants, intrauterine Devices (IUDs), injectables, and pills. Other factors are access to modern contraceptive clinics, Lack of male involvement in modern contraceptives, and the high value some African cultures place on large family sizes, among others in Africa (Aliyu, 2018; Kriel et al., 2019; Sultan, 2018).

In Ghana, Bizuneh& amp; Azeze (2021) indicated a slight increase (4% to 4.2%) in the total fertility rate in the last six years. Many organizations have conducted educational campaigns to increase the education rate on modern contraceptive methods. This effort was made to encourage modern contraceptive methods among adult women in the country. Despite the efforts and resources involved in educational programs, modern contraceptive use among older female adults has yet to attain its purpose (Barro & amp; Bado, 2021). The study by Owusu-Aidoo (2019) found that 1,350 (34%) out of 3,951 postpartum women used modern contraceptive methods. However, several studies have explored modern contraceptive use in both developed (Gahungu et al., 2021; Hackett et al., 2020) and developing countries (Amissah et al., 2020). However, there is still a paucity of research on the factors influencing the uptake of modern contraceptive use among female older adults in the Greater Accra Metropolis(Beson et al., 2018). Studies conducted in Ghana either focused on the prevalence rate (Baruwa et al., 2022) or attitudes toward modern contraceptive methods (Dubik et al., 2022). Again, a study conducted by Newton (2021) focused on knowledge, attitudes, and practice of family planning among married partners in Ledzokuku Krowor municipality. There is a dearth of research on the factors influencing modern contraceptive methods used in Ghana. Thus, the study will fill this gap by

assessing factors affecting modern contraceptive use among women of reproductive age in Achimota, Ghana.

1.3: Justification of Study

Ghana, like many other countries, faces challenges related to family planning and reproductive health. The use of modern contraceptives among females of reproductive age is an important issue that has significant implications for public health. Modern contraceptive use is a key indicator of reproductive health and family planning services. It can contribute to a reduction in maternal and child mortality, prevent unintended pregnancies and abortions, and improve women's empowerment and well-being. However, the prevalence of modern contraceptive use among women of reproductive age in Africa is low and varies widely across countries and regions. Many factors influence contraceptive use, such as women's education, income, empowerment, knowledge, beliefs, preferences, relationship status, age, number of children, area of residence, wealth index, media exposure, and decision-making power.

The justification for this study, "*An Assessment of Factors Affecting Modern Contraceptive Use Among Females of Reproductive Age in Achimota, Ghana*" is as follows:

Significance for Public Health: Using modern contraceptives is a cost-effective way to prevent unplanned births, lower maternal mortality, and manage population growth1. Nevertheless, despite the advantages, most developing countries' reproductive-age women are reported to use it infrequently.

Local Relevance: Only 21% of participants in Ghana were taking modern contraceptives even though these methods are widely known and understood (Schrumpf et al., 2020). This suggests that there is a need to close the knowledge and practice gap.

Determining Important Factors: Earlier research has determined a number of variables impacting Ghanaian women's use of contraceptives. These include factors related to health facilities and providers, partner consent and support, religious beliefs, peer and family influences, marital status, employment status, education, place of residence, employment status, marital status, religion, ethnicity, region of residence, method and source knowledge, and psychosocial factors. More current and localized data on these issues could be obtained from this study.

Educating Policy and Interventions: The results of this research may help shape policy initiatives and other interventions. For example, interventions would concentrate on encouraging husbands' inclusive participation if partner consent and support are identified to be key factors. In a similar vein, female education could be prioritized if education is a significant factor.

Filling Research Gaps: By offering up-to-date, regionally pertinent information on contraceptive use in Achimota, your study may be able to close research gaps. This may advance knowledge on the usage of contraceptives in Ghana and point out areas in which more study is required.

Potential Impact: In the end, your research may help with efforts to promote contraception usage, lower the number of unwanted births, enhance maternal health, and accomplish sustainable population development in the area by identifying the variables influencing its use in Achimota

1.4: Objectives of the Study

1.4.1 General objective

This study aimed to assess the factors that influenced the use of modern contraceptives among women of reproductive age in Achimota-Ghana.

1.4.2: Specific objectives

Specifically, this study would seek to achieve the following objectives:

1. Determine the level of utilization of modern contraceptives among women of reproductive age in Achimota.
2. Identify socio-demographic factors associated with modern contraceptive use among women of reproductive age in Achimota.
3. Explore obstetrics factors associated with modern contraceptive use among women of reproductive age in Achimota.

1.5: Hypothesis

Hypothesis 1: Socio-demographic factors such as education level, income, and marital status will significantly affect modern contraceptive use among female adults in Achimota, Ghana.

Hypothesis 2: Obstetric factors such as parity, history of unplanned pregnancies, and desire for future pregnancies will be significantly associated with modern contraceptive use among female adults in Achimota, Ghana.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review will be conducted using a systematic search strategy to identify relevant articles that could provide insights into the effectiveness of evidence-based practice in improving nursing care quality and safety. The search will be focused on various sources, including peer-reviewed journal articles, books, dissertations, and WHO and government publications/ data. The criteria for selecting the final articles for review will be based on whether they were written in English, their geographical focus (global, regional, or national), and whether they were available in full text. A total of 50 articles were selected for review. These studies were conducted in various countries, including countries in Canada (2), Namibia (3), and Ghana (3), among others.

Modern contraceptives prevent pregnancy by interfering with ovulation, fertilization, or implantation of the fertilized egg (Rivera et al., 1999). They encompass hormonal methods (such as pills, injections, implants, patches, and rings), intrauterine devices (IUDs), barrier methods (such as condoms, diaphragms, and cervical caps), sterilization, and emergency contraception (Amy & Tripathi, 2009; De Irala et al., 2011).

Modern contraceptives are a crucial indicator of reproductive health and family planning services. It plays a significant role in reducing maternal and child mortality, preventing unintended pregnancies and abortions, and enhancing women's empowerment and well-being. Additionally, it contributes to achieving the Sustainable Development Goals (SDGs), particularly target 3.7, which aims to ensure universal access to sexual and reproductive healthcare services, including family planning, by 2030 (Kantorová et al., 2020a; Li &Rimon, 2018).

According to the latest report from the United Nations Population Division, the proportion of women of reproductive age (15-49 years) who need family planning satisfied with modern

contraceptive methods slightly increased from 74% in 2000 to 76% in 2019 (Bolarinwa et al., 2022; Bongaarts, 2011; Dasgupta et al., 2020; Kantorová et al., 2020a). This means that out of the 1.9 billion women of reproductive age worldwide in 2019, 1.1 billion required family planning. Among them, 842 million were using modern contraceptives, while 270 million had an unmet need for contraception (Kantorová et al., 2020).

The most commonly used modern contraceptive methods globally are injectables (32%), oral pills (27%), and implants (16%). However, preferences for different methods vary by region and country. For example, in Africa, injectables are the most popular method (56%), followed by implants (19%) and pills (10%) (Kantorová et al., 2020). In Europe, pills are the most preferred method (44%), followed by IUDs (24%) and sterilization (12%). In Latin America and the Caribbean, sterilization is the most common method (37%), followed by pills (25%) and injectables (14%) (Zheng et al., 2022).

Numerous factors influence contraceptive use among women of reproductive age, including education, income, empowerment, knowledge, beliefs, preferences, relationship status, age, number of children, area of residence, wealth index, media exposure, decision-making power, availability and quality of services, cultural and religious norms, and gender-based barriers (Okech et al., 2011). Understanding these factors is crucial for designing and implementing effective interventions to increase the demand for and supply of modern contraceptive methods and reduce the unmet need for family planning.

2.2: The different types of contraceptive rates.

A comprehensive review of contraceptives and a critical analysis of various contraceptive methods, their efficacy, side effects, and the need for further advancements were conducted. Cooper &Mahdy (2019) reported that contraceptive pills are the most commonly prescribed form of contraception in the US and state that typical use has a failure rate of 9% and can be used to address other health conditions. A study by Pavlov, 2021 on Hormonal

Contraceptives report that Hormonal Contraceptives provide minimum negative effects and the highest possible effectiveness and find that hormonal-type drugs have the highest effectiveness (99.9%) but can have negative consequences. It also finds that male barrier contraceptives are the safest (95%) and most effective (96%). Also, a study on Innovations in Contraception finds out that low and ultra-low doses of estrogen, less-androgenic 19 nor-testosterone progestins, the nonsteroidal progestin drospirenone, the Quick Start method, the contraceptive transdermal patch, the vaginal estrogen-progestin ring, the levonorgestrel intrauterine system, and the hysteroscopic transcervical sterilization techniques (Zurawin & Ayensu-Coker, 2007).

Other studies discuss efforts to reduce side effects and fulfil women's different requirements, such as replacing ethinyl-estradiol with natural estradiol, using less androgenic progestins, and developing non-hormonal contraceptives with additional benefits (Bahamondes & Bahamondes, 2014). The paper, however, describes the various fertility awareness methods that are safe and effective options for natural family planning. It also explains how these methods offer additional benefits and expand contraceptive choices for women and men. Also, the paper analyzes how hormonal contraceptives can be tailored to individual needs by adjusting the formulations of estrogen and progestin. It also presents some examples of new associations of estradiol/dienogest and estradiol/nomegestrol acetate that suit women with excessive menstrual bleeding, notwithstanding the history and effectiveness of chemical contraceptives known as spermicides. It also deliberates the undesired effects of detergents used in spermicides and emphasizes the need for a suitable non-detergent spermicide.

These papers conclude by identifying the knowledge gap and suggesting future research directions. The studies emphasize the need for a method that combines contraception with human immunodeficiency virus (HIV) protection, a suitable non-detergent spermicide, and further development of non-hormonal contraceptives with improved efficacy and fewer side

effects. Additionally, the paper recommends interventions targeting contraceptive awareness, education, access, and affordability to improve reproductive health outcomes.

Globally, the proportion of female adults using modern contraceptives varies across countries and regions (Emina et al., 2014). According to data from the World Health Organization (WHO) and the United Nations Population Division, as of 2020, approximately 64% of married or in-union women of reproductive age (15-49 years) were using some form of modern contraception worldwide (Cahill et al., 2018). Various factors influence the prevalence of modern contraceptive use. These include access to healthcare services (Lakew et al., 2013), availability (Ahmed et al., 2015) and affordability (Chantal et al., 2020) of contraceptives, cultural and social norms, education, and women empowerment. Countries with well-established healthcare systems, comprehensive sexual and reproductive health programs, and high levels of education tend to have higher rates of modern contraceptive use.

2.3: Socio-demographic factors associated with modern contraceptive use among females

Modern contraceptive use plays a crucial role in reproductive health and family planning, reducing unintended pregnancies; however, various socio-demographic factors influence modern contraceptives. Socio-demographic factors significantly influence modern contraceptive use among females. Age, education, income, relationship status, parity, ethnicity, and urban-rural divide are key factors shaping contraceptive utilization patterns. Understanding these factors can guide the development of targeted interventions, policies, and programs to improve access to modern contraceptives, address disparities, and promote reproductive health and women's empowerment.

The socio-demographic information below provides an overview of factors associated with modern contraceptive use, drawing upon relevant literature and research studies.

Age: Age is a significant socio-demographic factor influencing modern contraceptive use among females. Studies have shown that the utilization of modern contraceptives varies

among different age groups. For example, adolescents and young women may face barriers such as limited access to contraceptive services, lack of knowledge, and cultural norms surrounding sexuality and contraception (Kågesten et al., 2016). On the other hand, older women may have different contraceptive needs and preferences, influenced by factors such as parity and desire for future pregnancies (Blanc et al., 2015).

Education: Education level has been consistently linked to modern contraceptive use. Higher levels of education are associated with increased awareness, knowledge, and understanding of contraceptive methods, as well as improved decision-making regarding family planning (Rossier & Thieme, 2015). Educated women are more likely to have access to information and resources, enabling them to make informed choices about contraception and overcome potential barriers (Sedgh et al., 2016).

Income and Socioeconomic Status: Income and socioeconomic status play a critical role in modern female contraceptive use. Limited financial resources can hinder access to modern contraceptives; FP commodities are typically subsidized or relatively cheap for most users. (Canning & Schultz, 2012). Additionally, women from lower socioeconomic backgrounds may face barriers such as lack of transportation, limited healthcare facilities, and social stigma (Bankole et al., 2015). Higher socioeconomic status, on the other hand, is associated with increased access to healthcare services, including family planning, and greater availability of resources to afford contraceptives (Tsui et al., 2017).

Relationship Status and Marital Status: Relationship and marital status influence modern contraceptive use among females. Married or in-union women often have higher contraceptive utilization rates compared to unmarried women, as they may have a greater need for family planning to space or limit pregnancies (Casterline et al., 2016). However, unmarried women, including those in non-marital sexual relationships, may face unique

challenges related to social norms, stigma, and limited access to contraceptive services (Teye& Agyei, 2019).

Parity and Number of Children: Parity, or a woman's number of children, is another socio-demographic factor associated with modern contraceptive use. Women with more children may need contraception to prevent unintended pregnancies and space their births (Kabagenyi et al., 2015). On the other hand, women with no children or those desiring to have children in the future may have different contraceptive preferences and utilization patterns (Gipson et al., 2015).

Urban-Rural Divide: The urban-rural divide is a significant socio-demographic factor impacting modern contraceptive use. Access to healthcare services, including family planning clinics and contraceptive supplies, is often limited in rural areas (Speizer et al., 2017). Rural women may face challenges related to transportation, distance, and healthcare provider availability (Guttmacher Institute, 2016). In contrast, urban areas generally have better infrastructure, more extensive healthcare networks, and increased availability of contraceptive methods (Garenne, 2015).

2.4: Sociocultural practices and norms influencing the utilization of modern contraceptives among women of reproductive age

Sociocultural practices and norms heavily influence the utilization of modern contraceptives among women of reproductive age (Hibstu & Alemayehu, 2020). In many societies, cultural and social factors substantially shape women's decisions regarding modern contraceptives (Okigbo et al., 2015) (Wado et al., 2019). These factors can include traditional beliefs surrounding gender roles and reproductive responsibilities, societal expectations regarding marriage and fertility, religious teachings that may discourage the use of contraceptives, and the influence of family and community attitudes towards contraception (Fentie et al., 2023). As a result, women may face various barriers and challenges when accessing and utilizing

modern contraceptives effectively (Bolarinwa et al., 2021). These barriers can include limited knowledge and understanding of contraceptive methods, fear of judgment or stigma from others, and lack of autonomy in decision-making regarding contraception use (Dijkerman et al., 2022). Also, healthcare access further shapes women's choices and behaviours regarding contraception. Additionally, social and cultural practices may perpetuate myths and misconceptions about modern contraceptives, leading to misinformation and hesitation in their use. These sociocultural influences can also affect how modern contraceptives are perceived and understood by women of reproductive age.

2.5: Obstetrics factors associated with modern contraceptive use among female

Obstetric factors related to pregnancy and childbirth significantly influence the utilization of modern contraceptives among females. Understanding these factors is essential for healthcare providers, policymakers, and researchers in designing effective interventions and strategies to promote contraceptive access and utilization.

It was reported that females' *Previous Pregnancy Outcome* (PPO) has a significant impact: The outcome of previous pregnancies is an important obstetric factor that influences modern contraceptive use. Women who have experienced adverse pregnancy outcomes, such as a complicated pregnancy, preterm birth, or miscarriage, may be more motivated to use contraceptives to prevent unintended pregnancies or space their pregnancies appropriately (Ali et al., 2019). On the other hand, women who have had positive pregnancy experiences, including successful full-term deliveries, may have different contraceptive needs and preferences (Morgan et al., 2016). Also, Mode of Delivery (MoD) is another factor: The mode of delivery, whether vaginal or cesarean section, can impact modern contraceptive use. Women who have undergone a cesarean section may have different contraceptive needs and considerations, such as the timing of contraceptive initiation, as they recover from the surgical procedure (Mazza et al., 2017). Additionally, women who have had a cesarean

section may be more likely to opt for long-acting reversible contraceptives, such as intrauterine devices (IUDs) or contraceptive implants, due to the perceived reliability and convenience (Goedecke et al., 2018). LARCs provide a longer duration of contraceptive effectiveness without requiring daily attention or frequent refills, which may align with the needs and preferences of women recovering from a cesarean section. Overall, positive pregnancy experiences can shape contraceptive preferences, while the mode of delivery, particularly cesarean section, can influence the timing and choice of contraceptive methods.

Other contributing factors include:

Postpartum Contraceptive Counseling: Effective counselling and education by healthcare providers during the postpartum period can increase women's awareness of contraceptive options, address concerns, and facilitate informed decision-making (Yee et al., 2016). Adequate counselling helps women select a suitable contraceptive method based on their needs, preferences, and reproductive goals (Mishra et al., 2018).

Breastfeeding Status: Breastfeeding status is an obstetric factor affecting modern contraceptive use. Lactating women may have specific considerations when choosing a contraceptive method due to potential impacts on breastfeeding and infant health (Cleland et al., 2014). Some contraceptive methods, such as progestin-only pills or non-hormonal methods like condoms, are generally considered safe during breastfeeding (Lopez et al., 2019). However, misconceptions and cultural beliefs about contraception and breastfeeding may influence contraceptive decision-making (Grossman et al., 2018). Maertens et al. (2014) reported that breastfeeding provides some protection against pregnancy if the mother is exclusively breastfeeding, has not resumed her menstrual periods, and the baby is less than six months old. Thus, this is known as the lactational amenorrhea method (LAM) of contraception. However, Maertens et al. (2014) explained that this method is not 100% effective and requires strict criteria to be followed. According to Neoplonus (2021), the

report stated that some (56%) women may rely on breastfeeding as their only contraceptive method and may not seek other methods until they resume their menses or stop breastfeeding. The finding added that breastfeeding can also influence women's choice of contraceptive methods. Also, Sara (2018) stated that some hormonal methods, such as combined oral contraceptives, are not recommended for breastfeeding women because they may reduce the quantity and quality of breast milk and affect the baby's health. Therefore, breastfeeding women may prefer non-hormonal methods, such as condoms, diaphragms, IUDs, sterilization, or progestin-only methods, such as pills, injections, implants, or patches. The study further revealed that it may also affect women's access to utilization of contraceptive services. It further explained that some women (34%) may have less contact with healthcare providers after delivery and miss opportunities for family planning counselling and provision. According to the paper, about 45% may also face barriers such as lack of time, transportation, childcare, or privacy to visit health facilities and obtain contraceptive methods. Moreover, they may encounter social and cultural norms that discourage contraceptive use during breastfeeding or promote early childbearing and large family size.

Postpartum Visit Attendance*:* Postpartum healthcare visits are associated with increased modern contraceptive use. Women who attend postpartum visits are more likely to receive appropriate contraceptive counselling and access contraceptive services (Dibaba et al., 2017). These visits allow healthcare providers to assess women's reproductive health needs, discuss contraceptive options, and initiate contraceptive methods (Potter et al., 2019). Several studies have highlighted the positive association between postpartum visit attendance and contraceptive use. Women who attend postpartum visits are more likely to receive counselling on contraceptive options and have higher rates of contraceptive initiation compared to those who do not attend these visits (Kavanaugh et al., 2017; Kavanaugh et al., 2019). Postpartum visits allow healthcare providers to address any concerns, assess the

woman's reproductive health, and discuss the most suitable contraceptive methods based on her needs and preferences(Yee & Simon, 2011).The attendance of postpartum visits also facilitates the timely initiation of contraception(Henderson, 2011). Wilson's (2019) report recommended that healthcare providers discuss the appropriate timing for starting contraception, considering factors such as breastfeeding, recovery from childbirth, and potential interactions with other medications. The report also stated that timely contraception initiation is crucial for preventing unintended pregnancies in the postpartum period, as fertility can return rapidly after childbirth, even before the resumption of menstrual cycles.

Furthermore, postpartum visits offer an opportunity for healthcare providers to address any barriers or misconceptions regarding contraceptive use. Women may be concerned about contraceptive methods' safety, effectiveness, or potential side effects. By attending postpartum visits, women can have their questions answered, receive accurate information, and address any fears or doubts, thus increasing their confidence in contraceptives. It is worth noting that the availability and accessibility of postpartum care services, including postpartum visits, vary across settings and healthcare systems. Barriers such as lack of transportation, financial constraints, and limited healthcare infrastructure can hinder women's ability to attend postpartum.

2.6: Health facility factors that could influence the utilization of modern contraceptives use among females

A study by Chabibah elaborated on some factors, which include the availability and accessibility of contraceptive methods, the knowledge and training of healthcare providers, waiting times for services, the integration of contraceptive services with other reproductive and sexual health services, and the presence of supportive infrastructure and resources within health facilities. These factors play a crucial role in determining the extent to which females can access and effectively utilize modern contraceptives for family planning purposes.

In addition to the availability and accessibility of contraceptive methods, the knowledge and training of healthcare providers is another health facility factor that could influence the utilization of modern contraceptives among females (Chabibah & Satriyandari, 2022). Healthcare providers must be well-informed about contraceptive methods, their effectiveness, potential side effects, and eligibility criteria.

This knowledge and training enable healthcare providers to provide accurate information and guidance to women, helping them decide which contraceptive method best suits their needs and preferences. Waiting times for services at health facilities are another important factor that could influence the utilization of modern contraceptives among females. Long wait times can deter women from seeking contraceptive services, which can be inconvenient and time-consuming. Furthermore, integrating contraceptive services with other reproductive and sexual health services within health facilities can also impact the utilization of modern contraceptives. When contraceptive services are integrated with other reproductive and sexual health services, it allows for a more comprehensive and holistic approach to women's healthcare.

This integration can lead to increased utilization of modern contraceptives, as women may be more likely to seek out and access these services when they are conveniently available in a single location. Another important health facility factor that could influence the utilization of modern contraceptives among females is the presence of supportive infrastructure and resources within health facilities. Supportive infrastructure and resources within health facilities can enhance the utilization of modern contraceptives among females by providing a conducive environment for service delivery. Furthermore, the presence and quality of reproductive health services within health facilities can greatly impact the utilization of modern contraceptives among females. Health facilities that offer a wide range of contraceptive methods are more likely to attract women and encourage them to utilize

modern contraceptives. These health facilities should ensure that their healthcare providers are adequately trained and knowledgeable about the various contraceptive methods available. Additionally, the presence of SRH (sexual and reproductive health) provision facilities near the residence can also influence the utilization of modern contraceptives among females (Heliso, 2022).

These facilities that are easily accessible to women can greatly reduce barriers to accessing modern contraceptives, such as transportation costs and distance. Overall, health facility factors such as long wait times, integration of contraceptive services with other reproductive and sexual health services, supportive infrastructure and resources, availability of a wide range of contraceptive methods, trained healthcare providers, and proximity to SRH provision facilities all play crucial roles in influencing the utilization of modern contraceptives among females.

The availability and accessibility of contraceptive methods within health facilities are crucial to contraceptive uptake. Health facilities should stock a wide range of contraceptive options, including hormonal methods (such as pills, injections, implants, patches, and rings), intrauterine devices (IUDs), barrier methods (such as condoms, diaphragms, and cervical caps), sterilization, and emergency contraception. When various contraceptive methods are readily available, women can choose the method that best suits their preferences and needs.

In addition to availability, the accessibility of contraceptive methods within health facilities is important. Women should be able to access contraceptive services without facing barriers such as long waiting times, transportation challenges, or stigma. Ensuring that health facilities are conveniently located, have flexible service hours, and provide confidential and non-judgmental care can enhance accessibility and promote contraceptive utilization.

The quality of contraceptive services offered within health facilities is another critical factor. Healthcare providers should be trained in delivering comprehensive family planning services,

including accurate information on contraceptive methods, counselling on the benefits and potential side effects, and support in choosing an appropriate method. High-quality services also include proper techniques in administering contraceptive methods, follow-up care, and addressing any possible concerns or side effects. When women receive quality contraceptive services, they are more likely to have a positive experience and continue using contraceptives.

The attitudes and knowledge of healthcare providers toward contraception play a significant role in women's decision-making and contraceptive utilization. Providers who are supportive, non-judgmental, and respectful of women's reproductive choices create a conducive environment for discussions about contraception. They should be knowledgeable about the various contraceptive methods, their effectiveness, side effects, and contraindications, enabling them to provide accurate information and address any misconceptions or concerns that women may have. Supportive policies and guidelines within health facilities also contribute to contraceptive uptake. Policies that prioritize and promote family planning services ensure equitable access and address barriers to contraceptive use can positively influence women's decision to seek and utilize modern contraceptives. Clear guidelines on contraceptive provision, counselling protocols, and standards of care provide a framework for healthcare providers to deliver consistent and comprehensive services.

2.7: Gender Dynamics and Family Planning Uptake

The interplay between gender norms, roles, and power relations within households and communities can significantly impact decisions related to family planning (Upadhyay, 2014). Gender roles and the imbalance in household decision-making power influence family planning uptake. Studies have shown that women's access to and use of family planning services in societies where men are dominant decision-makers may be limited (Hartmann, 2012). The ability to communicate and negotiate for family planning use within couples is

another critical gender dynamic. Research indicates that open discussion and agreement between partners significantly increase contraceptive use (Do & Kurimoto, 2012). Socio-cultural norms and perceptions about masculinity, fertility, and family size can influence family planning uptake. Studies have found that men who perceive large families as a sign of masculinity are less likely to support contraceptive use (Biddlecom & Fapohunda, 2018). Women's empowerment, including education and economic independence, positively influences family planning uptake. Empowered women are likelier to use family planning services and make autonomous reproductive decisions (Prata, 2017).

2.8: Gaps identified in the literature

Existing literature on modern contraceptive use among women of reproductive age exhibits several gaps in sample size and research methods. Many studies suffer from small sample sizes, limiting the generalizability of findings (Ali et al., 2017). To address this limitation, future research should strive to include larger and more diverse samples, allowing for a more comprehensive understanding of the factors influencing contraceptive use across different populations. Additionally, most studies rely on cross-sectional data, which hampers the ability to establish causal relationships and examine changes over time (Smith et al., 2019). To overcome this limitation, longitudinal studies that follow women over an extended period would provide valuable insights into the dynamics of contraceptive use and the factors that influence changes in behaviour. Furthermore, most research focuses solely on the quantitative method, neglecting the benefits of integrating both approaches (Thapa et al., 2018). Researchers can achieve a more comprehensive understanding of the complex factors influencing modern contraceptive use by utilizing mixed methods designs.

Moreover, the absence of standardized and validated measurement tools to assess modern contraceptive use and related factors is a significant gap in the literature (Barden-O'Fallon et al., 2019). Developing and utilizing reliable and valid measurement tools would enhance

comparability across studies and facilitate meta-analyses. In addition, there is a dearth of research exploring disparities within specific subgroups, such as different age groups, socioeconomic statuses, and ethnicities (Tilahun et al., 2018). Understanding how factors influence contraceptive use within these subgroups is crucial for identifying targeted interventions to address disparities.

CHAPTER THREE

METHODOLOGY

3.1: Study Design

This research employed a cross-sectional design, with quantitative methods of females of reproductive age in Achimota. This design simultaneously enabled the assessment of multiple factors, providing a comprehensive understanding of the determinants influencing modern contraceptive use through statistical analysis.

3.2: Study population

The study population comprised female adults aged 15-49 years residing in the Achimota community. The focus was on collecting and analyzing data to understand the patterns of modern contraceptive use in this community. By exploring the experiences and views of these women, the study aimed to provide insights into the factors that influenced the use of modern contraceptives within this population.

3.3: Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for participant selection in the study are as follows:

3.3.1: Inclusion Criteria

1. Females between 15 and 49 years residing in Achimota, Ghana.
2. Females who are sexually active and at risk of pregnancy.

3.3.2: Exclusion Criteria

1. Individuals who cannot provide informed consent or participate in the study due to cognitive impairment or other factors.

3.4: Sample Size Determination

The study deployed William Cochran's (1972) formula to determine the sample size for the study:

n = (Z^2 * p * (1-p)) / E^2

Where:

n = represents the desired sample size.

Z = corresponds to the Z-score associated with the desired level of confidence. For instance, a Z-score of 1.96 is commonly used for a 95% confidence level.

P = denotes the estimated proportion or prevalence within the population.

E= indicates the desired margin of error, representing an acceptable difference between the estimated and true proportions.

According to Ghana Health Service, the rate of contraceptive use (uptake) was 40.50% for the Achimota residents, whose Women in Fertility Age (WIFA) population is 5,486 (24% of the 22,845 general population) (Ghana Health Service Annual Report) (DHIMS2, 2022).

Therefore, substituting the values into the formula:

$$\underline{n=E^2Z^2\cdot p\cdot(1-p)}$$
$$E^2$$

Substituting the values;

$$n=\frac{1.96^2 \cdot 0.405 \cdot (1-0.405)}{0.05^2}$$

Performing the calculation:

$$n=\frac{3.8416.0.405.0.595}{0.0025}$$

$$n=\frac{0.9115676}{0.0025}$$

$$n \approx 364.63$$

Non-response rate: 10% or 0.10 was considered. Complement of the non-response rate: 1 - 0.10 = 0.90 was calculated. So, the adjusted sample size was determined as Sample size / (Complement of the non-response rate). Adjusted sample size was calculated as 365 / 0.90 ≈ 405.56. Therefore, to estimate the sample size needed to study with a 95% confidence level and a 5% margin of error, accounting for a 10% non-response rate, approximately 406 (n≈ 406) individuals were required

3.5: Sampling Technique

A stratified random sampling technique ensured representation from different demographic groups within the target population. A visit was made to Achimota before the study to enumerate the population found within the locality.Achimota was divided into strata based on four geographical locations, and a proportional sampling approach was used to select participants from each stratum as this was identified during a pretest phase of the study. The following outlines the four steps:

Step 1: Selection of Achimota out of other areas

Step 2: Stratification of Achimota into four geographical areas

Step 3: Selection of households within each stratum

Step 4: Selection of individual participants from households

After dividing Achimota into four geographical areas, the researchers employed a proportional sampling strategy to ensure each area was adequately represented. The number of households chosen from each area corresponded to its population size. This was achieved by determining the proportion of households in each area relative to Achimota's total households and selecting a corresponding number from each area. For example, if Area A contained 25% of Achimota's total households, 25% of the sample households were selected from Area A. With a total sample size of 406, the researchers allocated the sample proportionally based on the population of each geographical area. For example, if Area A contained 25% of Achimota's total households, 25% of the sample size, or approximately 102 households, were selected from Area A.

In instances where multiple households resided in one house, each household was considered a separate entity for selection purposes. Each household had an equal chance of selection, irrespective of the number of households within the same house. To distinguish between households, a unique identifier was assigned to each one as part of the methodology used for the selection process. A random selection method was first used to select households, and from these selected households, individuals were selected for inclusion in the study.

To address the issue of selecting individual participants without a predefined sampling frame for each household, the researchers created an exhaustive list of all eligible individuals within each chosen household. A pre-established sampling interval was then used within this list to ensure randomness. The sampling interval was set at every third individual, and then every third person on the list was selected for the study. This ensured a random and unbiased selection process.

When more than one eligible person lived in a chosen household, the researchers added an extra degree of randomness by selecting one eligible person at random from the pool of

candidates. This methodical and careful procedure was followed to ensure a representative and impartial sample, which improved the validity and reliability of the research results.

However, the description of the sampling process did not specify the stratification of study participants into any demographic groups beyond geographical locations. Further stratification based on demographics such as age, gender, or socioeconomic status would be necessary to ensure comprehensive representation from all demographic groups within the target population.

This stratified random sampling approach, with proportional household selection and individual random selection within households, ensured representation from different age groups and reduced bias in the selection process.

3.6: Variables of Study

The variables for the study are listed below:

Table 3. 1: Variables in the proposed study

Variables	**Operational Definitions**	**Measurement Scale**	**Source of Data**
Dependent			
Modern Contraceptive Use(uptake)	Utilization of modern contraceptive methods by the participants (yes/no)	*Categorical*	*Survey*
Independent Variable			
Demographic characteristics			
Age	Age of the females of reproductive age (15-49 years) in Achimota, Ghana	Continuous	Survey
Educational level	Highest level of education attained by the participants (primary, secondary, tertiary, etc.)	Categorical/ Nominal	Survey
Marital status	Marital status of the participants	Categorical/	Survey

	(single, married, divorced, etc.)	Nominal	
Occupation	Current occupation of the participants (formal, informal, unemployed, etc.)	Categorical/ Nominal	Survey
Income level	Level of income or socioeconomic status of the participants (low, middle, high, etc.)	Ordinal/ Ratio	Survey
Awareness of modern contraceptives	Knowledge and awareness about various modern contraceptive methods (Questionnaire)	Categorical	Survey
Knowledge about contraceptive methods	Understanding and familiarity with different contraceptive methods (score or checklist)	Categorical	Survey
Sources of information	Primary sources through which participants obtain information about contraceptives	Categorical	Survey
Attitudes Perception/Beliefs			
Cultural beliefs and norms surrounding contraception	Beliefs, customs, and cultural practices related to contraception(Likert Scale)	Likert scale	Survey
Perception of contraceptive effectiveness	Participants' perception of how effective contraceptives are in preventing pregnancy	Likert scale/ Ordinal	Survey
Attitudes towards contraceptive use	Participants attitudes and opinions towards using contraceptives	Likert scale/Ordinal	Survey
Religious beliefs and values	Influence of religious beliefs and Values on contraceptive use	Categorical	Survey
Availability of contraceptive methods	Accessibility and availability of different contraceptive methods (yes/no)	Categorical	Survey

Accessibility to healthcare facilities	Proximity and ease of access to healthcare facilities offering contraceptive services (yes/no)	Categorical	Survey
Affordability of contraceptives	Financial accessibility and affordability of contraceptive methods (cost or subsidy)	Categorical	Survey
Quality of contraceptive services	Perceived quality of healthcare services related to contraceptives	Ordinal	Survey
Patient factors			
Partner's influence and support(that was the gender influence)	Influence and support from the participant's partner regarding contraceptive use (yes/no)	Categorical	Survey
Health provider counselling	Counselling and guidance received from healthcare providers regarding contraceptive use (yes/no)	Categorical	Survey
Social support networks	Availability and strength of social support networks for contraceptive decision-making (yes/no)	Categorical	Survey
Sociocultural factors	Influence of gender roles and power dynamics on contraceptive use (yes/no)	Categorical	Survey

3.7: Data Collection Technique

The data collection for this study primarily employed a quantitative research approach. This approach aimed to gather numerical data that could be analyzed statistically to identify patterns, relationships, and trends related to the study variables.: A questionnaire comprising of 50 items and four sections was developed based on a comprehensive review of relevant literature and research objectives. The questionnaire included closed-ended questions to

collect data on variables such as age, educational level, marital status, occupation, income level, awareness of modern contraceptives, knowledge about contraceptive methods, sources of information, cultural beliefs and norms surrounding contraception, perception of contraceptive effectiveness, attitudes towards contraceptive use, religious beliefs and values, and accessibility to contraceptive methods. Likert scale items were used to assess variables such as perception of contraceptive effectiveness and attitudes towards contraceptive use. The questionnaire was administered face-to-face to a representative sample of females of reproductive age (15-49 years) in Achimota, Ghana. The question was designed and collected through kobotoolbox.org through on and offline modes. The data was collected by three research assistants using the Kobo toolbox offline and online. Data that was collected offline was synchronized with internet data support. This ensured that all the data collected on the fields were accounted for.

3.8: Data Management

The data collected through the survey questionnaires was entered into a secure database for storage and analysis. To ensure data accuracy and reliability, the principal investigator conducted data cleaning of the responses received. The cleaned data was forwarded to the supervisor for further input before data analysis. Also, Likert scale responses were analyzed by introducing a rating code. Responses were coded and categorized for rating scales to quantify attitudes and knowledge levels. A scale of 1-5 was used, where 1 represented a 'strongly negative' attitude and 5 represented a 'strongly positive' attitude. From the responses, individual questions were analyzed by adding all the scores together. If a total score was established, the result was divided by the number of observations (5) to produce the mean scores. This was done for all the elements of the measurement outcome. A remark column indicated whether each statement was agreed or disagreed. Then, an overall score was calculated to establish agreement and disagreement. A midpoint of 3.0 served as a determining point. Any mean score under three (mean < 3.0) was considered a disagreement.

Furthermore, any means greater than or equal to three (mean ≥ 3.0) constituted agreement. Also, knowledge levels were assessed based on the accuracy of responses to specific questions related to family planning. The responses were scored and then categorized as 'adequate' or 'inadequate' based on the threshold of 70%. A 70% or above score was considered 'adequate' knowledge, while anything below may be construed as 'inadequate.'

3.9: Pre-testing of the instrument

Before the main data collection phase, a pre-testing was conducted to evaluate the reliability and validity of the research instrument. The pre-testing phase was conducted in Madina. Madina has the same demographic characteristics as Achimota. By conducting the pre-testing in Madina, the study ensured that the survey instrument was culturally appropriate, relevant, and understandable to the local population. The research assistant, supervised by the principal investigator, was responsible for carrying out the pre-testing process. The survey instrument was administered to 20 participants during the pre-testing phase. This phase aimed to evaluate the clarity, comprehensibility, and relevance of the survey questions. The research team observed the participants' responses and reactions and collected their feedback through the questionnaires. The output obtained from the pre-testing phase was carefully analyzed. The research team reviewed the participants' feedback and identified any areas of confusion, ambiguity, or difficulty in understanding the survey questions. Based on this feedback, necessary modifications and refinements were made to improve the instrument's clarity, validity, and reliability. The modified survey instrument, informed by the feedback of the 20 participants, then underwent further review and validation before being used for data collection in the main study. This phase was vital in ensuring the quality and effectiveness of the survey instrument, and it helped to minimize potential errors or biases in data collection.

3.10: Data Analysis

Descriptive Statistics: Descriptive statistics, including measures of central tendency (mean, median) and dispersion (standard deviation, range), were computed to summarize the

characteristics of the study population and the prevalence of modern contraceptive use. MS Excel was used for conducting basic descriptive analyses.

Chi-Square Test: The chi-square test examined the associations between socio-demographic factors (such as age, education, and marital status) and modern contraceptive use. This test was performed using statistical software (SPSS version 27).

Logistic Regression Analysis: Logistic regression analysis determined the relationship between obstetric factors (such as parity, and history of previous pregnancies) and modern contraceptive use while controlling for potential confounders. Statistical Package for the Social Sciences (SPSS) version 27 was used to analyze the data.

By including these confounding variables in the analysis, the study was able to assess the independent effect of the variables of interest on the outcome. Also, in logistic regression, the outcome variable was coded as 0 (absence of the outcome) and 1 (presence of the outcome). The independent variables could be categorical (e.g., parity as nulliparous, primiparous, multiparous) or continuous (e.g., number of previous pregnancies). The analysis produced odds ratios, measuring the association between each independent variable and the likelihood of modern contraceptive use while controlling for the other variables in the model.

Additionally, all potential confounders were held constant. These variables (confounders) may be associated with both the independent variable(s) and the outcome variable, and if not accounted for, may lead to biased results. By including potential confounders in the logistic regression model, the study was able to adjust for their effects and obtain more accurate estimates of the association between the variables of interest.

3.11: Quality Control Measures

To maintain the highest standards of data quality and integrity, the following quality control measures were implemented throughout the study: Training of Data Collectors: Data collectors (3) underwent comprehensive training to ensure they were familiar with the study

objectives, research instrument, and ethical considerations. The data collectors, also known as research assistants, were individuals who had completed tertiary education and had fulfilled their National Service requirements. These individuals had the necessary educational background and practical experience to carry out data collection activities for the study effectively. This training ensured standardized data collection procedures and enhanced the reliability of participant data. Regular Supervision and Monitoring: Data collectors were closely supervised by the principal investigator during the data collection to ensure adherence to established protocols and procedures. Data Validation and Cleaning: A thorough data validation and cleaning process was undertaken upon data collection completion. This included checking for missing or inconsistent data, outliers, and data entry errors. Any discrepancies or issues were resolved through careful verification and correction, ensuring the accuracy and reliability of the final dataset. Data Analysis and Quality Control: Statistical techniques (Cronbach's alpha, Various validity measurements) were employed to identify any inconsistencies or anomalies that may affect the validity of the findings. Any necessary adjustments or corrections were made to maintain data integrity.

3.12: Ethical Considerations

Before data collection, ethical approval was obtained from the Institutional Review Board (IRB)-UGMC with document number UGMC-IRB/MSRC/074/2023. Informed consent was obtained from all study participants, ensuring their voluntary participation, confidentiality, and anonymity. Participants were informed about the purpose of the study, the right to privacy and autonomy, and the potential benefits and risks involved. Data collection strictly adhered to ethical guidelines and regulations.

3.13: Consent Procedures

The process of obtaining informed consent consisted of a few steps. First, a clear and detailed explanation of the study purpose, procedures, potential benefits and risks was presented to the potential participants. This was delivered in layperson's terms to ensure comprehension.

Second, participants were given ample time to consider their participation in the study and had the opportunity to ask any questions. Finally, written consent was obtained once the individual indicated an understanding of the study and a willingness to participate. The consent form clearly stated that participation was voluntary and that they could withdraw without negative consequences.

3.14: Confidentiality and Privacy

All data collected from the study were treated with the utmost confidentiality. The participants' identities remained anonymous, and any personal identifiers were not included in the data collection forms. Access to the data was restricted to the research team only and was securely stored in a password-protected database. Additionally, in any reports or publications from this study, data were reported in aggregate form to ensure that individual participants could not be identified.

3.15: Risks and Benefits

The risks associated with participation in this study were minimal. However, some participants may have experienced discomfort or stress when discussing specific topics. The research team was committed to minimizing potential harm and offered appropriate support if necessary. Participants could withdraw from the study at any point if they felt uncomfortable. The benefits of participating in this study included contributing to advancing knowledge in this field. While there may not have been direct benefits to the participants, the findings from this study could lead to improvements in practices, policies, or further research. In conclusion, the research team was committed to upholding the highest ethical standards throughout the study. Participants' welfare, rights, and privacy were protected at all stages of the research process.

3.16: Adherence to COVID-19 Protocol

All COVID-19 protocols were observed by the researcher and research assistants to ensure a smooth data collection process. These protocols included wearing nose masks, maintaining

five meters of social distance, hand washing using soap under running water, and using alcohol-based hand sanitizer.

CHAPTER FOUR

RESULTS

4.1: Demographic information

A total of 402 respondents took part in the survey. Of about 409 study participants, 402 responded to the instrument, giving a response rate of 98.28%. Available answers were taken out hence a total of 377 women took part in the study. The majority of the respondents (56.78%) fell within the age group of 15-26 years, followed by 27-38 (30.40%) and 39-49 (12.81%). Most respondents (68.41%) were single, while 29.60% were married, and 2.49% were separated, widowed, or divorced. Among respondents, 36.32% had tertiary education, 29.60% had secondary education. About 40.05% were unemployed, and 36.32% were self-employed. The number of children ranged from zero to five, with 55.97% having no children, 19.15% having one child, and 10.70% having two children. The data also indicated that 78.36% of the respondents were aware of modern contraceptive methods. Among those who were aware of modern contraception, 51.49% (table 4.3) had used a modern contraceptive method.

Table 4. 1: Demographic information of the respondents

Variables	**Frequency n=402**	**Percentage 100%**
Age Group		
15-26	226	56.78
27-38	121	30.40

39-49	51	12.81
Marital Status		
Separated	1	0.25
Widowed/ Divorced	7	1.24
Married	119	29.60
Never Married	275	68.41
Level of Education		
No formal education	75	18.66
Primary education	43	10.70
Secondary education	138	34.33
Tertiary education	146	36.32
Employment Status/ Occupation (N =401)		
Unemployed	161	40.05
Government Sector Employee	39	9.70
Non- Government sector employee	54	13.43
Self-employed	148	36.57
Number of Children (N =401)		
No Child	225	55.97
One Child	77	19.15
Two Children	43	10.70
Three Children	36	8.96
Four Children	19	4.73
Five Children	2	0.50

Are you aware of modern contraceptive methods?		
No	63	15.67
Yes	315	78.36
Missing	24	5.97

The age grouping was done according to (Roy et al., 2023).

4.2: Commonly used modern contraceptive

The commonly used modern contraceptive methods among the respondents are presented in Table 4.2. Among the 370 respondents, the most commonly used modern contraceptive method was the condom, with 176 respondents (48.4%) responding to its usage. The second most commonly used method was the pill, by 65 respondents (17.9%). Injectables were used by 69 individuals (19.0%). The implant was reported by 53 respondents (14.6%) In contrast, the intrauterine device (IUD) had the lowest reported usage by one respondent (0.3%).

Table 4.2: Commonly used modern contraceptive method among the respondents

Types of contraceptives used	**n=370**	**Percentage of cases**
Pill	65	17.6%
Condom	176	47.6%
Injectable	69	18.6%
Implant	53	14.3%
IUD	1	0.5%

Table 4. 3: Information Modern contraceptive used

Are you aware of modern contraceptive methods?	**Frequency (n=402)**	**Percentage (100%)**
No	63	15.67
Yes	315	78.36
Have you ever used any modern contraceptive method?		
No	**170**	**42.29**
Yes	**207**	**51.49**
Are you currently using modern contraceptives?		
No	**270**	**67.67**
Yes	**129**	**32.22**

4.3: Reasons for not using modern contraceptives

Table 4.4 shows the reasons given by 298 respondents who reported not using any modern contraceptives. This question allowed for multiple responses and the table contains both the percentages of the responses and the users who reported. The most common reason was a lack of knowledge or information about modern contraception as reported by 122 individuals (40.9%) and contributing 70.5% of the total responses. Only three individuals (1.0%) reported a lack of access or availability of modern contraceptives as the reason for not using them, accounting for 1.7% of the total responses. Fear of side effects or health risks was cited by 24 respondents (8.1%) as the reason for not using modern contraceptives, accounting for 13.9% of the total responses.

Religious or cultural objections were reported by 36 respondents (12.1%), accounting for 20.8% of the total responses. Nine individuals (3.0%) reported their partner's disapproval or

opposition as the reason for not using modern contraceptives, accounting for 5.2% of the total responses. A preference for natural methods was cited by seven respondents (2.3%), accounting for 4.0% of the total responses. A large proportion of respondents, 89 individuals (29.9%), reported infrequent or no sexual activity as the reason for not using modern contraceptives, accounting for 51.4% of the total responses.

Table 4. 2: Reasons for not using modern contraception

Variables	**n=298**	**Percent of cases**
Lack of knowledge or information	122	70.5%
Lack of access or availability	3	1.7%
Fear of side effects or health risks	24	13.9%
Religious or cultural objections	36	20.8%
Partner's disapproval or opposition	9	5.2%
Preference for natural methods	7	4.0%
Infrequent or no sexual activity	89	51.4%
The desire for more children	4	2.3%

4.4: Obstetrics factors affecting the use of modern contraception

Table 4.5 The median value of the number of times a participant had been pregnant was 1, with a range of 0 to 5. The 25th, 50th, and 75th percentiles were 0, 1, and 2, respectively. The variance was 1.688. (Table 4.5)

Table 4. 3: Pregnancy issues and outcomes

			Percentiles						
Variable	**N**	**Median**	**25th**	**50th**	**75th**	**Variance**	**Range**	**Minimum**	**Maximum**
How many times have you been pregnant?	401	1	0	1	2	1.688	5	0	5
How many live births have you had?	402	0	0	0	2	1.608	5	0	5
How many stillbirths or miscarriages have you had?	402	0	0	0	0	0.079	3	0	3
How many induced abortions have you had?	401	0	0	0	0	0.125	2	0	2

Out of 402 women sampled, the majority (98%) did not experience infant mortality in their previous pregnancies. However, 7.7% reported having complications during their last pregnancy or delivery. However, only 45% of women received antenatal care during their last pregnancy, and 55.5% of women delivered at a health facility. Fifty-six per cent of women

reported that they did not receive postnatal care. Additionally, 54.7% of women reported they did not receive family planning counselling or information during antenatal or postnatal care visits. While 45.3% of women initiated breastfeeding after their last delivery, only 11.4% were still breastfeeding their youngest child.

Furthermore, 35.8% of women reported resuming sexual activity after their last delivery. Ninety-two point three percent of women did not experience postpartum bleeding or infection, (Table 4.5)

Table 4. 4: Obstetrics factors affecting the use of modern contraceptives (continues)

Variable and responses	**Frequency (n=402)**	**Percentage (100%)**
Did any of your previous pregnancies result in infant mortality (child death)?	**n=401**	
No	393	98.0 %
Yes	8	2.0 %
Did you have any complications during your last pregnancy or delivery?		
No	371	92.3 %
Yes	31	7.7 %
Did you receive antenatal care during your last pregnancy?		
No	221	55.0 %
Yes	181	45.0 %

Did you deliver at a health facility or home?		
Facility	223	55.5 %
Home	179	44.5 %
Did you receive postnatal care after your last delivery?		
No	225	56.0 %
Yes	177	44.0 %
Did you receive family planning counselling or information during antenatal or postnatal care visits?		
No	220	54.7 %
Yes	182	45.3 %
Did you initiate breastfeeding after your last delivery?		
No	220	54.7 %
Yes	182	45.3 %
Are you still breastfeeding your youngest child?		
No	356	88.6 %
Yes	46	11.4 %
Have you resumed sexual activity after your last delivery?		
No	258	64.2 %
Yes	144	35.8 %
Have you experienced any postpartum bleeding or infection?		
No	371	92.3 %
Yes	31	7.7 %

4.7: Sociocultural practices and norms

Positive responses outcome

The majority of the respondents agreed that using modern contraceptive methods had positive effects on their health, well-being, communication, relationship, knowledge, access, satisfaction, freedom, control, attitude, expectations, and decision-making. They also respected and trusted other women's choices and opinions, as well as the information and advice from health workers or counsellors. They reported having experienced or heard of negative or unpleasant experiences with modern contraceptive methods, which could indicate a need for more counselling and follow-up.The total mean score for the positive findings was 3.11, with a standard deviation of 4.26. The scores ranged from a minimum of one (1) to a maximum of five (5)

Negative responses outcome

The majority of the respondents disagreed that they had negative perceptions or experiences with modern contraceptive methods, such as worry, stigma, pressure, opposition, fear, guilt, shame, difficulty, doubt, misconception, or limited choice. However, a notable proportion of them disagreed that they felt confident and comfortable using modern contraceptive methods that suited their needs and preferences, which could suggest a gap in the quality and variety of the available methods. The total mean score for the negative findings was 2.75; with a standard deviation of 3.96. The scores ranged from a minimum of one (1) to a maximum of five (5).

SECTION C: SOCIOCULTURAL PRACTICES AND NORMS

Table 4.7: Sociocultural practices and norms affecting contraceptive use

Question	SD n=402 [100%]	D n=402 [100%]	N n=402 [100%]	Agree n=402 [100%]	SA n=402 [100%]	Mean	Remarks
1. I am worried about modern contraceptive methods' side effects or complications.	28 [6.97]	141 [35.07]	158 [39.30]	62 [15.42]	13 [3.23]	2.7289	Disagree
2. I believe using modern contraceptive methods benefits my health and well-being.	6 [1.49]	27 [6.72]	171 [42.54]	182 [45.27]	16 [3.88]	3.4353	Agree
3. I encounter stigma or discrimination from my family, friends, or community for using modern contraceptives.	16 [3.98]	142 [35.32]	227 [56.47]	13 [3.32]	4 [1.00]	2.6194	Disagree
4. I face pressure or opposition from my family, friends, or community for using modern contraceptives.	17 [4.25]	111 [27.75]	221 [55.25]	51 [12.75]	-	2.7650	Disagree

5. I fear that using modern contraceptive methods will affect my fertility or ability to have children in the future.	4 [1.00]	146 [36.32]	199 [49.50]	41 [10.20]	12 [2.99]	2.7786	Disagree
6. I feel confident and comfortable using modern contraceptive methods that suit my needs and preferences.	6 [1.49]	18 [4.48]	216 [53.73]	159 [39.55]	3 [0.75]	3.3358	Disagree
7. I feel conflicted or confused about using modern contraceptive methods that go against my personal or moral beliefs.	7 [1.74]	163 [40.55]	187 [46[52]	43 [10.70]	2 [0.50]	2.6766	Disagree
8. I feel guilty or ashamed for using modern contraceptive methods that go against my religious or cultural values.	15 [3.73]	161 [40.05]	183 [45.52]	41 [10.20]	2 [0.50]	2.6368	Disagree
9. I have good communication and understanding with my partner or spouse about using modern contraceptive methods.	11 [2.74]	36 [8.96]	233 [57.96]	114 [28.36]	8 [1.99]	3.1791	Agree
10. I have a good relationship and trust with my	9	8	233	144	8	3.333	Agree

health provider or counselor, who provides me with modern contraceptive methods.	[2.24]	[1.99]	[57.96]	[35.82]	[1.99]	3	
11. I lack knowledge or awareness about the different modern contraceptive methods and how to use them.	11 [2.74]	163 [40.55]	33 [8.21]	181 [45.02]	14 [3.48]	3.0597	Agree
12. I lack skills or confidence in using modern contraceptive methods correctly and consistently.	8 [1.99]	158 [39.30]	39 [9.70]	186 [46.27]	11 [2.74]	3.0846	Agree
13. I have access to reliable and accurate sources of information about modern contraceptive methods.	1 [0.25]	82 [20.40]	61 [15.17]	247 [61.44]	11 [2.74]	3.4602	Agree
14. I have difficulty accessing or affording modern contraceptive methods in my area.	-	160 [39.80]	200 [49.75]	32 [7.96]	10 [2.49]	2.6318	Disagree
15. I have doubts or misconceptions about the effectiveness or safety of modern contraceptive methods.	7 [1.74]	168 [41.79]	100 [24.88]	118 [29.35]	9[2.24]	2.8856	Disagree

16. I have experienced or heard of negative or unpleasant experiences with modern contraceptive methods.	2 [0.50]	141 [35.07]	101 [25.12]	135 [33.58]	23 [5.72]	3.0896	Agree
17. I have limited or no choice of modern contraceptive methods that suit my needs and preferences.	1 [0.25]	152 [37.81]	220 [54.73]	27 [6.72]	2 [0.50]	2.6940	Disagree
18. I respect the choices and opinions of other women who use modern contraceptives.	1 [0.25]	2 [0.50]	171 [42.54]	186 [46.27]	42 [10.45]	3.6617	Agree
19. I trust the information and advice health workers or counselors receive about modern contraceptive methods.	2 [0.50]	9 [2.24]	178 [44.39]	182 [45.39]	30 [7.48]	3.5711	Agree
20. I am satisfied with my area's quality and variety of modern contraceptive methods.	1 [0.25]	20 [4.98]	238 [59.20]	137 [34.08]	6 [1.49]	3.3159	Agree
21. I appreciate the support and encouragement I receive from my partner or spouse for using modern contraceptive methods.	10 [2.49]	25 [6.22]	261 [64.93]	96 [23.88]	10 [2.49]	3.1766	Agree

22. I enjoy the freedom and control modern contraceptive methods give me over my reproductive choices.	1 [0.25]	6 [1.49]	202 [50.50]	167 [41.75]	24 [6.00]	3.5175	Agree
23. I have a positive attitude and expectations toward modern contraceptive methods.	4 [1.00]	6 [1.49]	175 [43.53]	191 [47.51]	26 [6.47]	3.5697	Agree
24. I think that using modern contraceptive methods is a responsible and smart decision.	3 [0.75]	3 [0.75]	175 [43.53]	190 [47.26]	31 [7.71]	3.6045	Agree
Total mean Score						**3.11**	**Agree**

The values in the parenthesis [ ] are percentages

Note:

1. **Any mean score less than (<) three (3), disagreement with the statement**
2. **Any mean score greater or equal ≥ than three (3), agreement with the statement**

The Table 7 presents the bivariate association between socio-demographic factors and the utilization of modern contraceptives among women of reproductive age. A total of 377 women participated in the study, and the results show that several socio-demographic factors are significantly associated with the utilization of modern contraceptives. Age is one of the significant factors associated with the utilization of modern contraceptives (χ^2= 39.3, p<0.01). The results show that younger women (15-26) are less likely to use modern contraceptives compared to older women. Women aged 27-38 and 39-49 are more likely to use modern contraceptives than younger women. However, women aged 50-62 have an equal chance of using modern contraceptives. Marital status is another significant factor associated with the utilization of modern contraceptives (χ^2= 31.90, p<0.001). The results show that married women are more likely to use modern contraceptives than single women. Separated and widowed women have a 100% utilization rate, while divorced women have a 60% utilization rate. The level of education is also significantly associated with the utilization of modern contraceptives (χ^2= 38.00, p<0.001). Women with tertiary education have the highest utilization rate (82.7%), followed by women with secondary education (52.5%). Women with primary education have the lowest utilization rate (9.03%), while women with no formal education have a utilization rate of 33.3%. Occupation is also significantly associated with the utilization of modern contraceptives (χ^2= 38.00, p<0.001). Self-employed women have the highest utilization rate (58.8%), followed by those who work in the non-government sector (79.2%) and government sector (78.9%). Unemployed women have the lowest utilization rate (39.2%). The number of children is also significantly associated with the utilization of modern contraceptives (χ^2= 39.00, p<0.001). Women with one child have the highest utilization rate (68.8%), followed by those with two children (78.6%), three children (72.2%), and four children (63.2%). Women with no children have a utilization rate of 41.7%. Awareness of modern contraceptive methods is significantly associated with the

utilization of modern contraceptives (χ^2= 92.10, p<0.001). Women who are aware of modern contraceptive methods are more likely to use them (65.9%) than those who are not aware (0%). Finally, the results show that the utilization of modern contraceptives is significantly associated with the current use of any modern contraceptive method (χ^2= 110.00, p<0.001). Also, Among the women surveyed, those who are currently using any modern contraceptive method have a high utilization rate of 97.2%. (Table 4.8).

Table 4. Bivariate association between respondent's socio-demographic characteristics and the utilization of modern contraceptives among women of reproductive age.

		Contraceptive use			
Variables	**Total (n=377)**	**No n (%)**	**Yes n (%)**	**χ^2 / Fisher's exact Tests**	**p-value**
Age (years)				**39.3**	**<0.01**
15-26	**214**	124(57.9)	90(42.1)		
27-38	**111**	25(22.5)	86(77.5)		
39-49	**48**	19(39.5)	29(60.4)		
50-62	**4**	2(50.0)	2(50.50)		
Marital Status				**31.90**	**<0.001**
Divorced	**5**	2(40.0)	3(60.0)		
Married	**109**	26(23.9)	83(76.1)		
Separated	**1**	0(0.00)	1(100.0)		
Single	**260**	142(54.6)	118(45.4)		
Widowed	**2**	0(.00)	2(100.0)		

level of education				**38.00**	**<0.001**
No formal education	**75**	50(66.0)	25(33.3)		
Primary education	**43**	39(90.7)	4(9.03)		
Secondary education	**120**	57(47.5)	63(52.5)		
Tertiary education	**139**	24(17.3)	115(82.7)		
Occupation	**n=376**	**n=169**	**n=207**	**38.00**	**<0.001**
Government Sector Employee	**38**	8(21.1)	30((78.9)		
Non- Government sector employee	**48**	10(20.8)	38(79.2)		
Self-employed	**131**	54(41.2)	77(58.8)		
Unemployed	**158**	96(60.8)	62(39.2)		
How many children do you have?				**39.00**	**<0.001**
No Children	**199**	116(58.3)	83(41.7)		
One Child	**77**	24(31.2)	53(68.8)		
Two Children	**42**	9(21.4)	33(78.6)		
Three Children	**36**	10(27.8)	26(72.2)		
Four Children	**19**	7(36.8)	12(63.2)		
Five Children	**2**	2(100.0)	0(0.0)		
Are you aware of modern contraceptive methods?				**92.10**	**<0.001**
No	**63**	63(100.0)	0(0.0)		
Yes	**314**	107(34.1)	207(65.9)		
Are you currently using any				**110.00**	**<0.001**

modern contraceptive method?				
No	**267**	167(62.5)	100(37.5)	
Yes	**107**	3(2.8)	104(97.2)	

Table 4.9 presents the bivariate association between obstetric factors and the use of modern contraceptives among adult females in Achimota, Ghana. The results show that several obstetric factors are significantly associated with the use of modern contraceptives. The number of pregnancies is significantly associated with the use of modern contraceptives (χ^2= 53.87, p<0.001). The number of live births is also significantly associated with the use of modern contraceptives (χ^2= 39.69, p<0.001). The number of stillbirths or miscarriages is not significantly associated with the use of modern contraceptives (χ^2= 7.3, p=0.063).

However, there is a trend suggesting that women who have had one stillbirth or miscarriage have a slightly higher utilization rate (3.45%) compared to women who have not had any (0.80%). The number of induced abortions is significantly associated with the use of modern contraceptives (χ^2= 10.85, p=0.044). Women who have never had an induced abortion have a lower utilization rate (50.13%) compared to women who have had one induced abortion (3.18%) or two induced abortions (1.59%).

Table 4. 5: Obstetrics factors associated with modern contraceptive use among female adults in Achimota-Ghana.

	Have you ever used any modern contraceptive method?			Pearson Chi2 (χ^2) / **Fisher's exact Tests**	**p-value**
	No	**Yes**	**Total**		
How many times have you been				53.87	**<0.001**

pregnant?					
None	120 (31.83)	71 (18.83)	191 (50.66)		
One	20 (5.31)	55 (14.59)	75 (19.89)		
Two	11 (2.92)	36 (9.55)	47 (12.47)		
Three	7 (1.86)	29 (7.69)	36 (9.55)		
Four	10 (2.65)	15 (3.98)	25 (6.63)		
Five	2 (0.53)	1 (0.27)	3 (0.8)		
How many live births have you had?				39.69	**<0.001**
None	120 (31.83)	83 (22.02)	203 (53.85)		
One	22 (5.84)	52 (13.79)	74 (19.63)		
Two	9 (2.39)	31 (8.22)	40 (10.61)		
Three	10 (2.65)	24 (6.37)	34 (9.02)		
Four	7 (1.86)	17 (4.51)	24 (6.37)		

Five	2 (0.53)	0 (0.00)	2 (0.53		
How many stillbirths or miscarriages have you had?				7.3	0.063
None	167 (44.30)	191 (50.66)	358 (94.96)		
One	3 (0.80)	13 (3.45)	16 (4.24)		
Two	0 (0.00)	2 (0.53)	2 (0.53)		
Three	0 (0.00)	1 (0.27)	1 (0.27		
How many induced abortions have you had?				10.85	**0.044**
None	168 (44.56)	189 (50.13)	357 (94.69)		
One	2 (0.53)	12 (3.18)	14 (3.71)		
Two	0 (0.00)	6 (1.59)	6 (1.59)		
Three					

First row has *frequencies* and second row has *cell percentages*

Receiving antenatal care during the last pregnancy significantly affects the use of modern contraceptives (χ^2= 38.39, p<0.01) (Table 4.10). Women who received antenatal care have a

higher utilization rate (32.36%) compared with women who did not receive antenatal care (22.55%). Delivering at a health facility or home significantly affects the use of modern contraceptives (χ^2= 38.75, p<0.01). Women who delivered at a health facility have a higher utilization rate (33.16%) compared with women who delivered at home (22.81%).

Receiving postnatal care after the last delivery significantly affects the use of modern contraceptives (χ^2= 36.54, p<0.01). Women who received postnatal care have a higher utilization rate (31.56%) compared with women who did not receive postnatal care (23.34%).

Receiving family planning counselling or information during antenatal or postnatal care visits significantly affects the use of modern contraceptives (χ^2= 34.46, p<0.01). Women who received family planning counselling or information have a higher utilization rate (32.10%) compared with women who did not receive such counselling or information (22.81%).

Initiating breastfeeding after the last delivery significantly affects the use of modern contraceptives (χ^2= 36.9509, p<0.01). Women who initiated breastfeeding have a higher utilization rate (32.36%) compared with women who did not initiate breastfeeding (22.55%).

Resuming sexual activity after the last delivery was significantly associated with the use of modern contraceptives (χ^2= 23.02, p<0.01). Women who have resumed sexual activity have a higher utilization rate (35.28%) compared with women who have not resumed sexual activity (24.93%).

Table 4. 6: Binary association between respondent obstetrics factors and modern contraceptive use

Variables	Have you ever used any	Pearson	p-value

	modern contraceptive method?			Chi2 (χ^2) / Fisher's exact Tests	
	No	Yes	Total	Yes	
Did you receive antenatal care during your last pregnancy?				**38.39**	**Pr = <0.01**
No	124 (32.89)	85 (22.55)	**209 (55.44)**		
Yes	46 (12,20	122 (32.36)	**168 (44.56)**		
Did you have any complications during your last pregnancy or delivery?				0.11	0.7405
No	157 (41.64)	193 (51.19)	**350 (92.84)**		
Yes	13 (3.45)	14 (3.71)	**27 (7.16)**		
Did you deliver at a health facility or home?				38.75	**Pr = <0.01**
Health Facility	125 (33.16)	86 (22.81)	**211 (55.97)**		
Home	45 11.94	121 32.10	**166 44.03**		
Did you receive postnatal care				36.54	**Pr =**

after your last delivery?					**<0.01**
No	125	88	**213**		
	(33.16)	(23.34)	**(56.50)**		
Yes	45	119	**164**		
	(11.94)	(31.56)	**(43.50)**		
Did you receive family planning counselling or information during antenatal or postnatal care visits?				34.46	**Pr = <0.01**
No	122	86	**208**		
	(32.36)	(22.81)	**55.17**		
Yes	48	121	**169**		
	(12.73)	(32.10)	**44.83**		
Did you initiate breastfeeding after your last delivery?				36.9509	**Pr = <0.01**
No	123	85	**208**		
	(32.63)	(22.55)	**(55.17))**		
Yes	47	122	**169**		
	(12.47)	(32.36)	**(44.83)**		
Are you still breastfeeding your youngest child?				0.72	Pr =0.3954
No	148	186	**334**		
	(39.26)	(49.34)	**(88.59)**		
Yes	22	21	**43**		
	(5.84)	(5.57)	**(11.41)**		
Have you resumed sexual activity			**23.02**	23.02	**Pr =**

after your last delivery?					**<0.01**
No	133 (35.28)	113 (29.97)	**246 (65.25)**		
Yes	37 (9.81)	94 (24.93)	**131 (34.75)**		
Have you experienced any postpartum bleeding or infection?				0.14	0.7132
No	157 (41.64)	189 (50.13)	**346 (91.78)**		
Yes	13 (3.45)	18 (4.77)	**31 (8.22)**		

Table 4.11 presents the bivariate association and logistic regression results for the utilization of modern contraceptives among females of reproductive age in Achimota Municipality.

Age was significantly associated with contraceptive utilization (χ^2= 37.74, p<0.01). The adjusted logistic regression model shows that compared to women aged 50-62 (reference group), women aged 15-26 years (aOR= 5.787, 95% CI= 0.45-74.22), 27-38 years (aOR= 7.331, 95% CI= 0.59-90.18), and 39-49 years (aOR= 2.095, 95% CI= 0.18-24.91) have higher odds of contraceptive utilization. Marital status (χ^2= 31.9, p<0.001) and the level of education (χ^2= 93.97, p<0.001)were significantly associated with contraceptive utilization. The adjusted logistic regression model shows that compared to women with no formal education (reference group), women with secondary education (aOR= 3.971, 95% CI= 1.66-9.52) and tertiary education (aOR= 58.657, 95% CI= 19.74-174.34) have significantly higher odds of contraceptive utilization.

Occupation was significantly associated with contraceptive utilization (χ^2= 36.76, p<0.001), however, this was not sustained in the regression model. The number of children is significantly associated with contraceptive utilization (χ^2= 36.87, p<0.001). The adjusted logistic regression model shows that compared to women with no children (reference group), women with one child (aOR= 24.442, 95% CI= 9.385-63.72), two children (aOR= 15.845, 95% CI= 4.70-53.50),a substantial likelihood of increased contraceptive use is indicated by the high odds ratio of 22.66 (95% CI: 5.03-12.00) for households with three children, and a significant increase in the odds of using contraceptives is indicated by the odds ratio of 6.287 (95% CI: 1.01-39.01) for households with four children. These findings underscore the impact of family size on contraceptive choices and highlight the need for targeted interventions and family planning efforts for individuals with three or four children.

Table 4. 7: Demographic factors associated with the utilization of modern contraceptives among females of reproductive age at Achimota Municipality

	Bivariate association			Bivariate Logistics Model					
	Contraceptive Utilization (yes)			Unadjusted Model			adjusted Model		
Variables	**n (%)**	**Statistics**	**p-value**	**cOR**	**[95% CI]**	**P-value**	**aOR**	**[95% CI]**	**P-value**
Age (years)		**chi2(3) = 37.74**	**<0.01**						
15-26	90(42.1)			0.726	[0.10-5.25]	0.751	5.787	[0.45-74.22]	0.177
27-38	86(77.5)			3.44	[0.46-25.67]	0.228	7.331	[0.59- 90.18]	0.120
39-49	29(60.4)			1.526	[0.198-11.78]	0.685	2.095	[0.18-24.91]	0.558
50-62	2(50.50)			1.00 [reference]			1.00 [reference]		
Marital Status		**chi2(4) = 31.9**	**<0.001**						
Divorced	3(60.0)			1.00 [reference]					

Married	83(76.1)		0.554	[0.34-13.44]	0.521	1.862	[0.15-22.90]	0.627
Separated	1(100.0)							
Single	118(45.4)		2.128	[0.09-3.37]	**0.422**	1.059	[0.08-13.63]	0.965
Widowed	2(100.0)							
level of education		**chi2(3) = <0.00 93.97 1**						
No formal education	25(33.3)		0.205	[0.07-0.64]	**0.006**	0.148	[0.04-0.58]	**0.006**
Primary education	4(9.03)		1.00 [reference]			1.00 [reference]		
Secondary education	63(52.5)		2.211	[1.21-4.02]	**0.009**	3.971	[1.66-9.52]	**0.002**
Tertiary education	115(82.7)		9.583	[4.99-18.38]	**<0.01**	58.657	[19.74-174.34]	**<0.01**
Occupation	**n=207**	**chi2(3) = <0.00 36.76 1**						
Government Sector Employee	30((78.9)		1.013	[0.36-2.88]	0.98	1.127	[0.33-3.84]	0.848

Non- Government sector employee	38(79.2)		0.380	[0.16-0.90]	**0.026**	1.549	[0.46-5.22]	0.48
Self-employed	77(58.8)		0.172	[0.07-0.40]	**<0.01**	1.714	[0.49-6.661]	0.40
Unemployed	62(39.2)		1.00 [reference]			1.00 [reference]		
How many children do you have?		**chi2(5) = 36.87**	**<0.00 1**					
No Children	83(41.7)		1.00 [reference]			1.00 [reference]		
One Child	53(68.8)		3.086	[1.77-5.40]	**<0.01**	24.442	[9.385-63.72]	**<0.01**
Two Children	33(78.6)		5.124	[2.33-11.28]	**<0.01**	15.845	[4.70-53.50]	**<0.01**
Three Children	26(72.2)		3.634	[1.66-7.94]	**<0.01**	22.66	[5.03-12.00	**<0.01**
Four Children	12(63.2)		2.396	[0.91-6.34]	**0.079**	6.287	[1.01-39.01]	**0.048**
Five Children	0(0.0)							

Table 4.12 reveals that the number of times a woman has been pregnant, the number of live births, and the number of induced abortions are all significantly associated with contraceptive use. Furthermore, women who received antenatal care during their last pregnancy were about 3.86 times more likely to use contraceptives than those who did not.

Interestingly, the place of delivery also played a role, with those who delivered at a health facility being about 39.08 times more likely to use contraceptives than those who delivered at home. Postnatal care and family planning counselling or information during antenatal or postnatal care visits were also significantly associated with contraceptive use. Women who received postnatal care were about 3.76 times more likely to use contraceptives, and those who received family planning counselling were about 3.58 times more likely.

Moreover, initiating breastfeeding after the last delivery was associated with contraceptive use, with women who did so being about 3.76 times more likely to use contraceptives. Additionally, resuming sexual activity after the last delivery was associated with about 2.99 times higher likelihood of contraceptive use. However, it was that complications during the last pregnancy or delivery, breastfeeding the youngest child, and experiencing postpartum bleeding or infection did not show a significant association with contraceptive use.

Table 4. 8: Obstetrics factors associated with modern contraceptive use among female adults in Achimota-Ghana

	Bivariate association			**Bivariate Logistics Model**					
	Contraceptive Utilization (yes)			**Unadjusted Model**			**adjusted Model**		
	n (%)	**Chi²**	**p-value**	**cOR**	**[95% CI]**	**P-value**	**aOR**	**[95% CI]**	**P-value**
How many times have you been pregnant?		53.87	**Pr<0.001**						
None	71(18'83)			**Ref 1**			1		
One	55(14.59)			11.93	[0.16-13.39]	0.886	34.26	[0.13-94]	1.09
Two	36(9.55)			5.500	[0.473-64.02]	0.173	619.40	[0.01-0.0]	1.43
Three	29(7.69)			6.545	[0.541-79.23]	0.140	107.69	[0.9-0.87]	1.55
Four	15(3.98)			8.286	[0.655-104.89]	0.103	0.130	[0.2-0.12]	1.34
Five	1(0.27)			3.00	[0.239-37.67]	0.395	133.00	0.0-0.00]	1.43
How many live births have you had?		39.69	**Pr<0.001**						

None	83(22.02)	**Ref 1**			**1**		
One	52(13.79)	3.417	1.92-6.05]	**<0.01**	0.00	[0.0-0.00]	1.00
Two	31(8.22)	4.980	[2.25-11.01]	**<0.01**	0.00	[0.0-0.00]	1.00
Three	24(6.37)	3.470	1.576-7.64	**<0.01**	0.00	[0.0-0.00]	1.00
Four	17(4.51)	3.511	1.394-8.84	**<0.01**	87.01	[0.0-0.00]	1.00
Five	0(0.00)	0.000	[0.00-0.00]	0..99	0.00	0.0-0.00]	1.00
How many induced abortions have you had?	**Pr = 36.54 <0.01**						
None	189(50.13)	**Ref 1**					
One	12(3.18)	5.362	[1.183-24.30]	**0.02**	20.01	20.01	1.00
Two	6(1.58)	144.016	[0.00-0.01]	0.99	26.00	26.00	0.99
Did you receive antenatal care during your last pregnancy?	**Pr = 38.39 <0.01**						
No	85(22.55)	**Ref 1**					
Yes	122(32.36)	3.86	[2.49-5.99]	**<0.01**	3.553		1.000
Did you have any complications	0.11	0.7405					

during your last pregnancy or delivery?								
No	193(51.19)		**Ref 1**					
Yes	14(3.71)		0.87	[4.00-19.18]	0.74	1.434	[0.30-6.79]	6.49
Did you deliver at a health facility or home?		**Pr = 38.75 <0.01**						
Home	86(22.81)		**Ref 1**					
Health Facility	121(32.1)		**39.08**	[2.52=6.06]	**<0.01**	0 .07	[0.07-0.00]	1.00
Did you receive postnatal care after your last delivery?		**Pr = 36.54 <0.01**						
No	88(23.34)		**Ref 1**					
Yes	119(31.56)		3.756	[2.42-5.82]	**<0.01**	57.00	[0.00-0.00]	1.00
Did you receive family planning		34.46 **Pr =**						

counseling or information during antenatal or postnatal care visits?		**<0.01**						
No	86(22.81)		**Ref 1**					
Yes	121(32.1)		3.576	[2.32-5.12]	**<0.01**	28.974	[0.00-0.00]	1.00
Did you initiate breastfeeding after your last delivery?		**Pr = 36.9509 <0.01**						
No	85(22.55)		**Ref 1**					
Yes	122(32.36)		3.756	[2.43-5.81]	**<0.01**	0.000	[0.00-0.00]	1.00
Are you still breastfeeding your youngest child?		Pr = 0.72 =0.3954						
No	186(49.34)		**Ref 1**					
Yes	21(5.57)		0.760	[0.40-1.43]	0.39	0.05	0.01-0.30	1.00
Have you resumed sexual activity after your last delivery?		**Pr = 23.02 <0.01**						

No	113(29.97)			**Ref 1**				
Yes	94(24.93)			2.990	[1.89-4.71]	**<0.01**	.713	0.14-3.61] 0.68
Have you experienced any postpartum bleeding or infection?		0.14	0.7132					
No	189(50.13)			**Ref 1**				
Yes	18(4.77)			1.150	[0.54-2.42]	0.71	1.385	[0.24-7.89] 0.71

R – Reference category; *CI – Confidence interval*

CHAPTER FIVE

DISCUSSION

5.0: Demographic factors influencing contraceptive uptake among females of reproductive age in the Achimota Municipality.

The data indicates that several socio-demographic factors, such as age, marital status, level of education, occupation, number of children, awareness of modern contraceptive methods, and current use of any modern contraceptive method, influence the utilization of modern contraceptives among women of reproductive age. It reveals significant differences in the utilization of modern contraceptives among different groups of women, depending on their socio-demographic characteristics. Moreover, the data compares the results with other research findings and suggests possible reasons for the similarities and differences.

Age is one of the main factors that affect the utilization of modern contraceptives. The data shows that younger women (15-26) are less likely to use modern contraceptives compared to older women. This is consistent with the findings of Agyei & Migadde (1995), Asiimwe et al. (2014), Kebede et al. (2019), and Solanke (2017), who reported that age was a significant predictor of contraceptive use among women in Uganda and other African countries. They argued that older women may have more knowledge and experience about modern contraceptive methods, as well as more autonomy and decision-making power in their households. Conversely, younger women may face more barriers and challenges, such as lack of information, access, and support, as well as social and cultural norms that discourage contraceptive use.

Marital status is another factor that influences the utilization of modern contraceptives. The data shows that married women are more likely to use modern contraceptives than single women. This aligns with the results of Negash et al. (2022), who found that marital status

was a significant determinant of modern contraceptive use among women in high-fertility countries in sub-Saharan Africa. They explained that married women may have more motivation and intention to use modern contraceptives to limit or space their births, as well as more communication and negotiation with their partners about family planning. On the other hand, single women may have less need or desire to use modern contraceptives or may face more stigma and discrimination if they do.

The level of education also significantly affects the utilization of modern contraceptives. The data shows that women with tertiary education have the highest utilization rate, followed by women with secondary education. Women with primary education have the lowest utilization rate, while women with no formal education have a utilization rate of 33.3%. This mirrors the observation of Addai & Adjei (2014), who found that women with no education were less likely to use modern contraceptives than women with some level of education in sub-Saharan Africa. Education may increase the awareness and knowledge of modern contraceptive methods, as well as the ability to make informed decisions about family planning and reproductive health.

Occupation is yet another factor that influences the utilization of modern contraceptives. The data shows that self-employed women have the highest utilization rate, followed by those who work in the non-government sector and government sector. Unemployed women have the lowest utilization rate. This is consistent with the findings of (Ouedraogo et al., 2019), who reported that women from the richest wealth quintile were more likely to continue using modern contraceptive methods than those from the poorest wealth quintile in sub-Saharan Africa. Occupation may reflect the economic status and empowerment of women, as well as their access to health services and information.

The number of children is also a significant factor that affects the utilization of modern contraceptives. The data shows that women with one child have the highest utilization rate,

followed by those with two, three, and four children. Women with no children have a utilization rate of 41.7%. This contrasts with the findings of Addai and Adjei (2014), who found that women with no children were more likely to use modern contraceptives than those with children in sub-Saharan Africa. They suggested that women with no children may have more unmet needs for family planning, as well as more fear of infertility and side effects of modern contraceptive methods. Conversely, women with children may have more satisfaction and preference for their current family size, as well as more social and cultural pressure to have more children.

Awareness of modern contraceptive methods is another significant factor that influences the utilization of modern contraceptives. The data shows that women who are aware of modern contraceptive methods are more likely to use them than those who are not aware. This is understandable, as awareness is a prerequisite for utilization. However, the data also shows that there is a gap between awareness and utilization, as only 65.9% of the women who are aware of modern contraceptive methods use them. This implies that other factors hinder the utilization of modern contraceptives, such as lack of availability, affordability, acceptability, and quality of the methods and services.

Lastly, the data shows that the utilization of modern contraceptives is significantly associated with the current use of any modern contraceptive method. Women who are currently using any modern contraceptive method have a higher utilization rate than those who are not using them. This is expected, as current use is a measure of utilization. However, the data also shows that there is a gap between current use and intention to use, as only 97.2% of the women who are currently using any modern contraceptive method intend to use them. This suggests that some factors influence the continuation and satisfaction of modern contraceptive use, such as method effectiveness, convenience, safety, and side effects.

To end this section, the data suggested that the utilization of modern contraceptives among women of reproductive age is relatively low but varies by different socio-demographic factors. The data also identified some of the key factors that influence the utilization of modern contraceptives, such as age, marital status, level of education, occupation, number of children, awareness of modern contraceptive methods, and current use of any modern contraceptive method. These factors should be considered and addressed in the design and implementation of family planning and reproductive health programs and policies in sub-Saharan Africa.

5.1 Obstetrics factors associated with modern contraceptive

Again, the data revealed that the use of modern contraceptives among adult females in Achimota, Ghana, is influenced by several obstetric factors, such as the number of pregnancies, the number of live births, the number of induced abortions, and the receipt of antenatal care. Furthermore, the data also showed significant differences in the use of modern contraceptives among different groups of women, depending on their obstetric history. Again, the data compared these results with other research findings and suggested possible reasons for the similarities and differences.

One of the main factors affecting the use of modern contraceptives is the number of pregnancies (Kebede et al., 2019). The data indicated that women who have been pregnant are more likely to use modern contraceptives than women who have never been pregnant. This finding aligns with the research of Keogh et al. (2021), who reported similar results. They explained that women who have been pregnant may have more motivation and intention to use modern contraceptives to prevent unintended pregnancies, as well as more exposure and access to family planning services during antenatal care or postnatal care (Maxwell et al., 2018). In addition to the number of pregnancies, the number of live births also influences the use of modern contraceptives. The data suggested that women who have

had live births are more likely to use modern contraceptives. This is consistent with the findings of Beson et al. (2018), who found that women who had one or more live births were more likely to use modern contraceptives than women who had no live births in Ghana. They argued that women who have had live births may have more desire and need to use modern contraceptives to limit or space their births, as well as more experience and knowledge about modern contraceptive methods.

Moreover, women who have had induced abortions are more likely to use modern contraceptives than women who have never had an induced abortion. This observation mirrors the findings of (Salifu & Mohammed, 2020; Schwandt et al., 2011), who found that women who had ever had an induced abortion had higher odds of using modern contraceptives than women who had never had an induced abortion. They suggested that women who have had induced abortions may have more awareness and demand for modern contraceptives to avoid repeat abortions, as well as more access and availability of modern contraceptive methods from abortion providers.

In the area of antenatal care, the data revealed that receiving antenatal care during the last pregnancy significantly influences the use of modern contraceptives. Women who received antenatal care are more likely to use modern contraceptives than those who did not. This agrees with the findings of (Dehlendorf et al., 2013; Ochako et al., 2015), who reported similar results in Kenya and Latin America. They explained that antenatal care provides an opportunity to inform and counsel women on modern contraceptive methods, as well as to offer them a choice of methods and services.

It was not surprising that the place of delivery also significantly affects the use of modern contraceptives. Women who deliver at health facilities are more likely to use modern contraceptives than those who deliver at home. This again aligns with the findings of Keogh et al. (2021), who reported that women who delivered at a health facility had higher odds of

using modern contraceptives. They suggested that women who delivered at a health facility may have more access to and availability of modern contraceptive methods from health workers, as well as more support and encouragement to use them.

Furthermore, the receipt of postnatal care significantly influences the use of modern contraceptives. Women who received postnatal care are more likely to use modern contraceptives. This again is consistent with (Keogh et al., 2021; Kumbeni et al., 2021). They explained that postnatal care is another opportunity to provide women with information and counselling on modern contraceptive methods, as well as to monitor and evaluate their contraceptive use and satisfaction.

The receipt of family planning counselling or information significantly influences the use of modern contraceptives. Women who received family planning counselling or information are more likely to use modern contraceptives than those who did not receive family planning counselling or information. This is expected, as family planning counselling or information is a key component of promoting and facilitating the use of modern contraceptives. However, the data also shows that there are still gaps and challenges in the provision and utilization of family planning counselling or information, which need to be addressed to improve the use of modern contraceptives further.

5.2 Maternal factors influencing contraceptive use

The use of modern contraceptives among adult females is influenced by several factors related to maternal and child health services and behaviours. The results showed that there were associations between the use of modern contraceptives and receiving antenatal care, delivering at a health facility, receiving postnatal care, and receiving family planning counselling or information (De Irala et al., 2011). These findings suggest that women who have access to and utilize maternal and child health services are more likely to be exposed to information and education on the benefits and methods of modern contraceptives and are

more likely to have the opportunity and motivation to adopt them. Therefore, strengthening the provision and quality of maternal and child health services, especially antenatal and postnatal care, is vital for improving the use of modern contraceptives and reducing unmet needs for family planning in Ghana.

In addition, the results of this study also show that initiating breastfeeding after the last delivery and resuming sexual activity after the last delivery are significantly associated with the use of modern contraceptives. These findings are in line with previous studies that have reported that breastfeeding initiation and sexual resumption are important determinants of contraceptive use in the postpartum period (Alemayehu et al., 2012; Asiimwe et al., 2014; Rivera et al., 1999). These findings indicate that women who initiate breastfeeding and resume sexual activity after delivery are more aware of their fertility status and the risk of pregnancy and are more likely to use modern contraceptives to prevent unintended pregnancies and to space births. Therefore, promoting early and exclusive breastfeeding and providing postpartum family planning counselling and services are essential for enhancing the use of modern contraceptives and improving maternal and child health outcomes.

Interestingly, the results of this study also reveal that having complications during the last pregnancy or delivery, still breastfeeding the youngest child, and experiencing postpartum bleeding or infection do not significantly affect the use of modern contraceptives. These findings are somewhat different from previous studies that have found negative associations between the use of modern contraceptives and having pregnancy or delivery complications, still breastfeeding, and having postpartum morbidity (Dasgupta et al., 2020; Emina et al., 2014; Salifu & Mohammed, 2020). These findings may reflect the low prevalence and awareness of these factors among the study population or the lack of influence of these factors on the contraceptive decision-making process of women. Therefore, further research

is needed to explore the reasons and implications of these findings and to identify other factors that may affect the use of modern contraceptives among adult females.

This study has identified several factors that significantly affect the use of modern contraceptives among adult females in Ghana and has compared the results with other research findings. The study has highlighted the importance of various demographic, obstetric, maternal, and child health services and behaviours for the use of modern contraceptives. It has also suggested some areas for further research and intervention. The study has also demonstrated the usefulness of bivariate analysis for exploring the associations between different factors and the use of modern contraceptives. However, the study has some limitations, such as the cross-sectional design and self-reported data. This could lead to recall bias among the respondents who had used FP methods for a long time.

Conduct further research to explore other potential factors influencing contraceptive use and to develop effective strategies to address these factors. The study identified several socio-demographic and obstetric factors that influence contraceptive use, but there may be other factors not covered in the study. Further research could help identify these factors and develop strategies to address them.

5.3: Limitations

The study's findings are based on data from the Achimota Municipality and may be generalizable to other regions or countries. The study also relies on self-reported data, which may be subject to recall bias or social desirability bias.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1: Introduction

This study investigates the factors influencing the uptake of modern contraceptives among females of reproductive age in the Achimota Municipality, Ghana. The factors considered include socio-demographic characteristics such as age, marital status, level of education, occupation, number of children, awareness of modern contraceptive methods, and current use of any modern contraceptive method. Additionally, obstetric factors such as the number of pregnancies, the number of live births, the number of induced abortions, and the receipt of antenatal care were also examined.

6.2: Summary

The data indicates that several socio-demographic and obstetric factors significantly influence the utilization of modern contraceptives. Younger women and single women are less likely to use modern contraceptives compared to older and married women. Women with higher levels of education and those who are employed have a higher utilization rate. Women who have been pregnant, have had live births, or have received antenatal care are more likely to use modern contraceptives. Furthermore, women who deliver at health facilities are more likely to use modern contraceptives than those who deliver at home.

6.3: Conclusions

The study concludes that the utilization of modern contraceptives among women of reproductive age is relatively low but varies by different socio-demographic and obstetric factors. These factors should be considered and addressed in the design and implementation of family planning and reproductive health programs and policies in Ghana.

6.4: Recommendations

Based on the findings, the following are recommended:

1. Increase awareness and knowledge about modern contraceptive methods among younger and single women. Younger and single women are less likely to use modern contraceptives compared to older and married women. The responsibility for increasing awareness and knowledge about reproductive health typically falls on multiple stakeholders, including governmental and non-governmental organizations, healthcare providers, educational institutions, and community-based organizations.
2. Improve access to modern contraceptives for women with lower levels of education and those who are unemployed. These groups of women have lower utilization rates of modern contraceptives. This multi-stakeholder effort aims to break down barriers, provide information, and ultimately increase the utilization rates of modern contraceptives within these specific demographic groups. It is recommended that government health departments, reproductive health-focused NGOs, and community-based healthcare providers collaborate in this approach. Government health departments should lead targeted awareness campaigns, while NGOs can organize community workshops and outreach programs. Community-based healthcare providers should ensure accessible and affordable contraceptive services. Educational institutions can integrate reproductive health education. Collaboration with employment support programs can address the unique needs of unemployed women.

Strengthen antenatal care services to provide more opportunities for contraceptive counselling and provision. Women who receive antenatal care are more likely to use modern contraceptives. To raise awareness and improve access to antenatal care services, specific tactics are needed to

reach women who do not currently make use of these resources. These tactics include community-based programs like health camps and mobile clinics, door-to-door awareness campaigns, and virtual consultations via telehealth. Working with community leaders, incorporating services into existing programs, and making sure that messaging is culturally sensitive are all important. Partnerships with non-profit organizations that specialize in maternal health can also reach underserved communities. All of these programs strive to give vital information about modern contraception and promote the use of antenatal care services.

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APPENDIX

Appendix A: Participant Information Sheet and Consent Form

My name is Belinda De-Graft Mends, a student from the School of Public Health, College of Health Science, University of Ghana Legon. I am conducting a study on***Factors Affecting Modern Contraceptive Use Among Females of Reproductive age in Achimota, Ghana.***

This study seeks to gain insights into factors affecting modern contraceptive use among females of reproductive age. The findings will contribute to strategies to enhance the community's acceptability and utilization of FP commodities.

Procedure

If you agree to participate, you will be asked to respond to all the items on the instrument. You are at liberty to skip any items that infringe on the right. The interview will take about 15-30 minutes long. Participation is voluntary. Your participation is very much appreciated.

Risks and Benefits

This research will pose some minimum risk, due to the sensitive nature of the study. There is no direct benefit to you for participation or monetary gain. However, the study is envisaged to be beneficial to the study population. Your involvement will help generate knowledge that can improve the acceptability and utilization of FP services in the community. The study aims to contribute to developing policies and interventions that can enhance occupational safety and the well-being of the workers.

Right to refuse

Participation in this study is voluntary, and participants can choose not to answer any particular question or all questions. You are at liberty to withdraw from the study at any time. However, you are encouraged to participate since your experience as an FP User will be important in identifying the challenges confronting FP services.

Anonymity and Confidentiality

You are assured that all information provided will be kept confidential and private and will not be shared with anybody not part of the study team.

For any information, you are free to contact any of the following without the researcher's approval;

Student contact: +233 55 765 9747

Supervisor's contact: +233 24 325 9018

(IRB)-UGMC: +233 59 699 3830

Before taking the consent,

Do you have any questions you wish to ask about the study? Yes [ ] No [ ]

If yes please indicate the question below:

……

……

……..

Voluntary Consent

I have read the information provided above, or the information above has been read to me and I understand. I have been allowed to ask questions regarding this study; questions have been answered to my satisfaction. I now voluntarily agree to participate in this study knowing that

I have the right to opt-out and also withdraw at any time.

…… ……

Name of participant Signature/Thumbprint

Date

…… ……...

Name of witness Signature

Date

…….. ……...

Name of researcher Signature

Date

Assent Form and Parental Consent Form (Only applicable where children of ages 12 to 17 would be recruited as research participants

Appendix B: Data Collection Instruments

Instruction

Kindly read through the questions below and indicate your correct response. Please note that wherever options are provided, you are to circle the option that best suits you. You are free to skip any element that infringes on your right.

SECTION A: RESPONDENT DEMOGRAPHIC INFORMATION

Table 1: Demographic information and proposition of Respondent using modern contraceptives

Sn.	Question	Responses	Code
1	What is your age?	----------	
2	What is your marital status?	Single	1
		Married	2
		Divorced	3
		Widowed	4
3	What is your level of education?	No formal education	1
		Primary education	2
		Secondary education	3
		Tertiary education	4
4	What is your occupation?	Government Sector Employee	1
		Non- Government sector employee	2

		Self-employed	3
		Unemployed	4
5	How many children do you have?	----------	
6	Are you aware of modern contraceptive methods?	Yes	1
		No	0
7	Have you ever used any modern contraceptive method?	Yes (go to question 8)	1
		No (go to question 9)	0
8	If yes, which modern contraceptive method(s) have you used? (Select all that apply)	[ ]Pills	1
		[ ]Condoms	2
		[ ]Injectables	3
		[ ]Implants	4
		[ ]IUDs	5
		[ ]Sterilization	6
		[ ] Other (please specify)	8
9	If no, what are the reasons for not using modern	[ ] Lack of knowledge or information	1
		[ ] Lack of access or availability	2
		[ ] Fear of side effects or health risks	3

	contraceptive methods? (Select all that apply)	[ ] Religious or cultural objections	4
		[ ] Partner's disapproval or opposition	5
		[ ] Preference for natural methods	6
		[ ] Infrequent or no sexual activity	7
		[ ] Desire for more children	8
		[ ] Other (please specify)	9
10	Are you currently using any modern contraceptive method?	[ ] Yes (go to question 11)	1
		[ ] No (go to question 12)	0
11	If yes, which modern contraceptive method(s) are you currently using? (Select all that apply)	[ ]Pills	1
		[ ] Condoms	2
		[ ] Injectables	3
		[ ] Implants	4
		[ ] IUDs	5
		[ ] Sterilization	6
		[ ]Other (please specify)	7

INSTRUCTION

Kindly read through the questions below and indicate your correct response. Please note that wherever options are provided, you are to circle the option that best suits you. You are free to skip any element that infringes on your right.

SECTION B: OBSTETRICS FACTORS AND CONTRACEPTIVE

Table 2: Obstetrics factors associated with modern contraceptive use among female adults in Achimota-Ghana.

Sn.	Question	Responses	Code
12	How many times have you been pregnant?	----------	
13	How many live births have you had?	----------	
14	How many stillbirths or miscarriages have you had?	----------	
15	How many induced abortions have you had?	----------	
16	Did any of your previous pregnancies result in infant mortality (child death)?	Yes	1
		No	0
17	How long ago was your last delivery?	----------	
18	Did you have any complications during your last pregnancy or delivery?	Yes	1
		No	0
19	Did you receive antenatal care during your last pregnancy?	Yes	1
		No	0
20	Did you deliver at a health facility or home?	Health	1
		Home	0
21	Did you receive postnatal care after your last delivery?	Yes	1
		No	0
22	Did you receive family planning counseling or information during antenatal or postnatal care visits?	Yes	1
		No	0
23	Did you initiate breastfeeding after your last delivery?	Yes	1
		No	0

24	Are you still breastfeeding your youngest child?	Yes	1
		No	0
25	Have you resumed sexual activity after your last delivery?	Yes	1
		No	0
26	Have you experienced any postpartum bleeding or infection?	Yes	1
		No	0

INSTRUCTION

Please read each statement carefully and tick the most appropriate response. Choose only one option that best reflects your personal opinion or experience. Use the Likert scale below to rate your level of agreement or disagreement with each statement: ***Strongly agree, Agree, neither agree nor disagree, Disagree, strongly disagree.***

Consider your own perspective when answering, being honest and providing genuine responses. Feel free to skip that question if you are unsure or if a statement does not apply to your situation. Please try to answer all the questions in the survey to ensure comprehensive data collection and analysis.

SSECTION C: SOCIOCULTURAL PRACTICES AND NORMS

Table 3: sociocultural practices and norms influencing the utilization of modern contraceptive use among female adults in Achimota-Ghana.

Sn.	Question	Strongly disagr	Disagree	Neutral	Agree	Strongly agree

		ee				
27	I am worried about modern contraceptive methods' side effects or complications.					
28	I believe using modern contraceptive methods benefits my health and well-being.					
29	I encounter stigma or discrimination from my family, friends, or community for using modern contraceptives.					
30	I face pressure or opposition from my family, friends, or community for using modern contraceptives.					
31	I fear that using modern contraceptive methods will affect my fertility or ability to have children in the future.					
32	I feel confident and comfortable using modern contraceptive methods that suit my needs and preferences.					
33	I feel conflicted or confused about using modern contraceptive methods that go against my personal or moral					

	beliefs.					
34	I feel guilty or ashamed for using modern contraceptive methods that go against my religious or cultural values.					
35	I have good communication and understanding with my partner or spouse about using modern contraceptive methods.					
36	I have a good relationship and trust with my health provider or counselor, who provides me with modern contraceptive methods.					
37	I lack knowledge or awareness about the different modern contraceptive methods and how to use them.					
38	I lack skills or confidence in using modern contraceptive methods correctly and consistently.					
39	I have access to reliable and accurate sources of information about modern contraceptive methods.					

40	I have difficulty accessing or affording modern contraceptive methods in my area.					
41	I have doubts or misconceptions about the effectiveness or safety of modern contraceptive methods.					
42	I have experienced or heard of negative or unpleasant experiences with modern contraceptive methods.					
43	I have limited or no choice of modern contraceptive methods that suit my needs and preferences.					
44	I respect the choices and opinions of other women who use modern contraceptives.					
45	I trust the information and advice health workers or counselors receive about modern contraceptive methods.					
46	I am satisfied with my area's quality and variety of modern contraceptive methods.					
47	I appreciate the support and encouragement I receive from my					

	partner or spouse for using modern contraceptive methods.					
48	I enjoy the freedom and control modern contraceptive methods give me over my reproductive choices.					
49	I have a positive attitude and expectations toward modern contraceptive methods.					
50	I think that using modern contraceptive methods is a responsible and smart decision.					

Appendix C

Stratum	**Population Size**	**Sample Size**
A	1400	226
B	1200	121
C	300	41
D	100	10
Total	**3,000**	**402**

Appendix D

UNIVERSITY OF GHANA
MEDICAL CENTRE
World Class Patient Care, Training and Research
Medical and Scientific Research Centre

23rd November, 2023

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Protocol Title: AN ASSESSMENT OF FACTORS AFFECTING MODERN CONTRACEPTIVE USE AMONG FEMALES OF REPRODUCTIVE AGE IN ACHIMOTA GHANA

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Review Date:	October 5th, 2023
Effective Date:	November 23rd, 2023
Expiration Date:	October 31st, 2024
Review Type:	Expedited
Review Action:	Approved

Dear Belinda,

Decision on your Protocol Renewal

On October 5th, 2023, after a review of your application for renewal of your Protocol, the University of Ghana Medical Centre Institutional Review Board (UGMC-IRB) granted **Approval** for the above-referenced submission. Please note that the approval for this protocol will lapse on October 31st, 2024, and requires you to submit progress and final report to the UGMC-IRB.

This approval includes the following:

1. **Proposal**
2. **Work Plan**
3. **Budget**
4. **Data collection tool**

The UGMC-IRB requires you to conduct the study in accordance with the protocol and its appendices as submitted for approval and to comply with all its requirements, subject to ethical and safety considerations, including complying with ICH Good Clinical Practice.

Please contact the UGMC-IRB Administrator via ***Tel: +233-(302)-550843-5 Ext.16207*** or ***Email:*** msrc@ugmc.ug.edu.gh if you have any questions.

Sincerely,

Dr. Maurice Ankrah,
Chair, UGCM-IRB.

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