UNIVERSITY OF CAPE COAST

MODERN CONTRACEPTIVES USE AMONG IMMEDIATE POSTPARTUM WOMEN IN SUNYANI MUNICIPAL AREA OF BONO REGION, GHANA

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2023

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BY

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Thesis submitted to the Department of Health, Physical Education and Recreation of the Faculty of Science and Technology Education, College of Education Studies, University of Cape Coast, in partial fulfillment of the requirements for the award of Doctor of Philosophy Degree in Health Promotion (Maternal and Child Health)

FEBRUARY 2023

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature…… Date……..

Name: Vincentia Sarfo-Brobbey

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: …….. Date: 27.11.2023

Name: Dr. John Elvis Hagan Jnr.

Co-supervisor's Signature ……. Date……

Name: Dr. Thomas Homenu

ABSTRACT

The study aimed to investigate modern contraception use among postpartum women in the immediate postpartum period within the Sunyani municipal area of Bono Region, Ghana. A descriptive cross-sectional survey was used to sample 903 postpartum women in their immediate postpartum period. Data were analysed with SPSS software version 22.0, and results were presented as frequencies, Pearson Chi-square test and binary logistic regression model. The results showed that 75%(n=678) of the women's knowledge level on the appropriateness of modern contraceptives use in the immediate postpartum period was low, with male condoms and injectables being the most commonly known compared to other methods. Though there was a positive attitude towards modern contraception, its utilisation among postpartum women was also low at 6%(n=52). All postpartum women attended the antenatal clinic (ANC) and postnatal clinic (PNC), but only 32%(n=292) and 26%(n=231) received counselling on family planning, respectively. Those who received education on possible side-effects of using modern contraception were 30%(n=157). The use of modern contraceptives after delivery was significantly associated with receiving counselling on family planning methods at both ANC and PNC, provision of education on possible side-effects of using modern contraceptive methods, postpartum women within the ages of 26-35 years, obtaining a tertiary level of education and having five or more living children. It is recommended that the Ministry of Health, Ghana Health Service, and other health agencies introduce Mothercraft Schools in all healthcare institutions to promote higher knowledge on modern contraception usage after delivery.

KEY WORDS

Ghana

Immediate postpartum period

Modern contraceptive

Mothercraft school

Postpartum women

ACKNOWLEDGEMENTS

My gratitude goes to many distinguished personalities through their guidance, advice, information, and immeasurable support that have made this study a reality. I am greatly indebted to Dr. Thomas Homenu and Dr. John Elvis Hagan Jnr. of the department of Health. Physical Education and Recreation for their tireless efforts and expert guidance, which helped me to complete this thesis.

I also want to acknowledge faculty members of the Department of Health and Physical Education and Recreation for their various roles during my course of study. Special thanks to all the postpartum women, heads, administrators and staff of all eight healthcare institutions for their immense support of this study.

Lastly, I express my appreciation to my husband, Dr. Yaw Bediako, for giving me all the necessary support to complete this thesis.

DEDICATION

To my husband, Dr Yaw Bediako; children; Deyonce and Roxanne and my siblings; Augustina and Georgina.

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CHAPTER ONE

INTRODUCTION

Family Planning is a decision made by individuals or married people on the number of children they would love to have, when to start having children, how long to rest between each pregnancy and when to stop having children (World Health Organisation [WHO], 2017). Family planning is achieved by using contraceptives (WHO, 2017). Contraceptives are drugs and devices used to prevent unplanned pregnancies and pregnancy-related health risks for infants and women, especially during the postpartum period (WHO, 2020). Finlayson et al. (2020) defined the postpartum period as the first six weeks after birth, where mothers are vulnerable to another pregnancy.

Postpartum women are at risk of unplanned pregnancies as early as six weeks of delivery (Nakiwunga et al., 2022; Moore et al., 2015). Globally, approximately 85 million women reported unplanned pregnancies (Dehingia et al., 2020), and 30 million births occur each year after the unplanned pregnancy (Barton et al., 2017). Pregnancies during the postpartum period expose mothers and infants to more significant health risks, which mostly lead to the deaths of either the mother or the infant and could be prevented by using modern contraception (Mahande & Obure, 2016). According to reports by Agula et al. (2022) and WHO (2013), using modern postpartum contraceptives provides an opportunity to meet the needs of postpartum women to prevent unplanned pregnancies, which mostly end in abortions. However, nearly 65% of these postpartum women globally are non-users of modern contraception (Lopez et al., 2014). In Ghana, 30% of married women and those in relationships have unmet needs for contraception (Ghana

Demographic Health Survey [GDHS], 2014). However, little is known about modern contraception usage among women in the immediate postpartum period. Hence, the current study.

Background to the Study

High fertility, which is associated with rapid population growth, presents challenges to the overall socioeconomic development of the country in general, the individual family in particular, and the reproductive health of women and children (Agbaglo et al., 2022; Ahinkoral et al., 2021). Maternal and child ill health and mortality are two major health problems challenging healthcare organisations, especially in developing countries (Sahoo et al., 2021). Despite a reduction in maternal and under-five morbidity and mortality rates in sub-Saharan African countries, the figures remain high (Doctor et al., 2018). Several studies conducted in Ghana have also revealed maternal and infant mortality as a problem in the country (Anarwat et al., 2021; Banchani & Tenkorang, 2014). Most maternal deaths result from complications encountered during and after pregnancy, childbirth, and unsafe termination of pregnancy (Adu et al., 2021). The Women and Children First (2015) annual report on maternal deaths revealed that maternal morbidity and mortality would reduce if there were easy access to quality healthcare. In addition, the report indicated maternal and infant mortality would decrease if there were consistent education and information on family planning and safe and effective contraception to space out and prevent unplanned pregnancies. Unplanned pregnancy occurs when a pregnancy is either unwanted or mistimed at the time of conception (Sedgh & Hussian, 2014). Unplanned pregnancy has been reported as an issue of concern in public health in

developed and developing countries because of its adverse effects on mothers' and infants' socioeconomic and psychological health status (Ranatunga & Jayaratne, 2020). An estimated 213 million pregnancies occur annually, with 74 to 85 million women having unplanned pregnancies, leading to 25 million unsafe abortions and 47 thousand maternal deaths annually (Dehingia et al., 2020; Ranatunga & Jayaratne, 2020). In sub-Saharan Africa, an estimated 14 million unplanned pregnancies are reported annually (Ameyaw et al., 2019), and 40% of unplanned pregnancies are recorded in Ghana (Nyarko, 2019). Frequent reports on the consequences of unplanned pregnancy and unsafely induced abortion include antepartum haemorrhage, uterine rupture, hypertensive disorders, maternal stress and depression, infertility, premature delivery, stillbirth, infants, and maternal deaths (Shifti et al., 2021; Nyarko, 2019).

A report from the Ghana Millennium Development Goals ([MDG], 2015) showed a decline in the maternal mortality rate from 634 per 100,000 live births in 1990 to 319 per 100,000 live births in 2015. Though there was a decline, the figure showed that maternal mortality in Ghana was relatively high, as the country could not attain the Millennium Development Goal 5.1 target of 190 maternal deaths per 100,000 live births by 2015. In furtherance, Sustainable Development Goal (SDG) 3 seeks to ensure healthy living and promote well-being at all ages. SDG 3 measures promote well-being by reducing water-borne and communicable diseases, providing universal access to sexual and reproductive healthcare services, and eliminating preventable deaths among children and women (United Nations [UN], 2015). With the SDG 3.1 target figure of less than 70 maternal deaths per 100,000 live births

by 2030, Ghana's maternal mortality rate of 308 in 2017, though an improvement over the 2015 figure of 319, is relatively high. Achieving the SDG 3.1 target of less than 70 maternal deaths per 100,000 live births in 2030 would be difficult if universal access to family planning information, education, and an adequate supply of modern postpartum contraceptive methods were not provided (Ameyaw et al., 2021).

Family planning is one of the most basic and essential healthcare services that can promote and ensure better reproductive health by reducing the dangers of ill health and mortality from early and late delivery (WHO, 2017). Also, family planning can be defined as allowing individuals to have the number of children they want and decide on the spacing of pregnancies. Family planning is achieved through effective contraceptive methods (WHO, 2017). Effective contraceptives, or modern contraceptives, are drugs and devices to prevent unplanned pregnancies and pregnancy-related health risks for infants and women, especially postpartum (Guta et al., 2021; WHO, 2020). Examples of modern contraceptive methods include the use of pills, injectables, vaginal rings, male and female condoms, emergency contraceptives, implants, intrauterine contraceptive devices, female and male sterilisation, and others.

The postpartum period starts after childbirth and often spans a duration of six to eight weeks when the mother's physical and physiological state returns to the non-pregnant condition (Kalra et al., 2017). The postpartum period has three distinct but continuous phases. The first phase is the acute period, which involves the first 6–24 hours postpartum, followed by the second phase, which is the sub-acute period lasting 2–6 weeks. The third

phase is the final delayed postpartum period lasting up to 6 months (Romano et al., 2010; as cited in Chauhan & Tadi, 2022). The postpartum period is the time when women are vulnerable to another pregnancy. Therefore, it is recommended that postpartum women use modern postpartum contraceptives to prevent short inter-pregnancy intervals (Mengesha et al., 2015). The use of postpartum contraceptives would not only decrease the occurrence of unplanned pregnancies; however, it would also improve the health of postpartum women and infants since short interpregnancy and delivery intervals shorter than 12 months are associated with adverse pregnancy outcomes. Such adverse outcomes include infant morbidity and mortalities, miscarriage, induced abortions, stillbirths, preterm births, an infant with a low birth weight, and neonatal and maternal depletion syndrome (Jalang'o et al., 2017; Rodriguez et al., 2015). Other studies have also shown that modern postpartum contraceptives promote the well-being of women and babies, thereby preventing long-term complications such as birth disabilities, chronic malnutrition, and stunted growth leading to deaths (Mehare et al., 2020).

Postpartum modern contraceptive usage remains low (Eliason et al., 2013). The literature reviewed between 1997 and 2018 revealed that the overall postpartum modern contraceptive prevalence rate in low and middle-income countries is about 41%, with West Africa recording the lowest usage rate of 36% (Agula et al., 2022). In Ghana, the prevalence of modern postpartum contraceptive usage was between 25% and 26.5% (Agula et al., 2022). Non-usage of modern postpartum contraceptives makes unplanned pregnancy rates high and poses significant health challenges among females

aged (15-49 years, especially those in the poorest and middle-income countries (Bellizzi et al., 2020).

Statistics showed that two-thirds of postpartum mothers are not using contraception, and one in three will be pregnant again within the first 15 months after delivery in developing countries (Jalango et al., 2017; WHO Report, 2018). Another study conducted among reproductive-aged women in Ghana revealed that only 21% of these women were using modern contraceptives, which implies that 79% of these women were not using modern contraceptives (Beson et al., 2018). Suppose all women, especially postpartum mothers, receive effective family planning counselling and services during maternal and child healthcare. Many unplanned or mistimed pregnancies each year because of unmet needs for modern contraception could be avoided or reduced (WHO Report, 2015).

Approximately 214 million women worldwide need modern contraceptives (Darroch et al., 2018). If the unmet need for modern contraceptives among these women were satisfied, unplanned pregnancies would decline from 89 million to 22 million annually. Unplanned births would also decrease from 30 million to 7 million per year, and induced unsafe abortions would also decrease from 48 million to 12 million annually, saving about 112,000 maternal lives and 655,000 babies. Improving contraception services and using the methods effectively would reduce the incidence of unplanned pregnancies, unsafe abortions, and maternal deaths (MGD Report, 2015). Unmet need for contraception by the Demographic and Health Survey (DHS) definition means that a woman (1) is married or in a consensual union, (2) is between the ages of 15 and 49 years, (3) can become pregnant, (4) wants

to have no more children or no children for at least two years, and (5) is not using traditional or a modern method of contraception (GSS, GHS, & ICF Macro, 2015).

Several studies on the unmet need for contraception have shown different factors that act as barriers to contraception use. Some of these factors include poor quality family planning counselling as part of maternal health services, accessibility to information and education on various modern contraceptive methods, women's education and occupational status, and other socio-demographic variables (Wulifan et al., 2016). Among the relationships between socio-demographic variables and the unmet need for contraception, a woman's age and the number of living children were most prominent (Wulifan et al., 2016). However, other studies on postpartum modern contraceptive use in Ethiopia and Ghana revealed that the educational status of postpartum women positively influences postpartum modern contraceptive use (MaeregayehuTibo et al., 2022; Abdulai et al., 2020; Gejo et al., 2019). A similar study from rural Nigeria showed that these variables: age, level of education, religion, and parity were significantly associated with women using modern postpartum contraception (Okoeguale et al., 2022). Another study on modern postpartum contraception by Passah (2020) found that respondents' educational status and income level promoted modern contraceptive use; meanwhile, respondents' age, age at marriage, and number of live births did not affect its usage. Findings from Letamo and Navaneetham (2015) revealed that women with low parity, having been exposed to media information on modern contraception, and women in their prime age were less likely to have an unmet need for modern contraception.

Further studies have shown an improvement in postpartum contraception use when a provision of modern contraception is integrated into maternal health services (High Impact Practices in Family Planning [HIPs], 2017), reducing the unmet need for contraception. A study by Agha and Williams (2016) revealed that inadequate quality of maternal health service provision and poor follow-up of clients had slowed contraception adoption and use. Providers instead base most of the health talks on promoting antenatal care (ANC) and institutional delivery, spending less time or leaving out educational talks on postpartum contraception (Agha & Williams, 2016). Another study indicated that providing ANC services and counselling could increase contraception use (Yadav & Dhillon, 2015). According to Do and Hotchkiss (2013), the intense use of antenatal care increased the adoption of postpartum contraception in Kenya and Zambia.

Several studies have shown how negative attitudes and a lack of education on modern family planning methods led to unplanned pregnancies because of the non-use of modern contraceptives. Another study on modern contraception revealed that respondents had an unfavourable attitude towards modern contraceptive use because of sociocultural beliefs, ill-health consequences, and a low or lack of sexual education. Meanwhile, respondents were sexually active (Seidu et al., 2022). Adegboyega (2019) carried out a study to look into married women's attitudes towards using contraceptives. The findings of the study indicated that the respondents exhibited a negative disposition towards the use of contraceptives. These behaviours led to low utilisation of contraception and its consequences for unplanned pregnancies.

Other studies have also shown that a lack of adequate knowledge of contraception hampers women's approval of modern contraception and sexual autonomy (Wulifan et al., 2016). Jalang'o et al. (2017) study revealed that nearly all the postpartum women (98%) interviewed at a county hospital in rural Kenya reported receiving contraceptive information from healthcare providers. Out of respondents who received family planning counselling, 86.3% used the modern family planning method within one year of delivery. A similar study in Ghana by Bawah (2021) showed that a lack of information and knowledge about contraception among women led to the failure of modern contraceptive usage, leading to unplanned conceptions and induced abortions. The number of unplanned pregnancies and abortions associated with complications would decrease or be avoided if the unmet need for modern contraception, especially among immediate postpartum women, were addressed. Based on this, it was imperative to investigate modern contraceptive use in the immediate postpartum period.

Statement of the Problem

The rate of acceptance of family planning methods in Ghana is said to be low, according to the Ghana Statistical Service (GSS), Ghana Health Service (GHS), and the International Classification of Functioning, Disability, and Health (ICF) Macro (2015). Several studies have revealed that, despite the endeavours undertaken by policymakers and non-governmental organisations (NGOs) to enhance the utilisation of contraception, the rate of adoption of modern contraception services in Ghana remains negligible (GSS, GHS, & ICF Macro, 2015; Marrone et al., 2014; Eliason et al., 2013). Agula et al. (2022) have observed that despite the nation's elevated levels of knowledge

and awareness of family planning services, there exists a notable deficiency in understanding immediate postpartum modern contraception. Based on the annual report of Family Planning (FP) 2030, there has been a relative increase in the utilisation of modern contraceptive methods, with some fluctuation. The utilisation of modern contraceptive methods in 2015 amounted to 20.4%, with a slight increase to 20.6% in 2016, followed by a subsequent decline to 20.4% in 2017. According to the Ghana FP2030 Report of 2022, there was an observed increase in the utilisation of modern contraceptive methods, rising from 20.7% in 2018 to 22.8% in 2022. The data presented substantiates the notion that the utilisation of modern methods of contraception remains relatively limited in Ghana. In order to achieve the goal of attaining a 44.4% contraceptive usage rate by the year 2030, it is imperative to implement enhancements in the utilisation of modern contraceptive methods, as indicated in the Ghana FP2030 Report of 2022.

According to the 2014 GDHS report, around 30% of married women were identified as having an unmet need for family planning. This refers to their expressed desire to either delay or completely avoid having a child while simultaneously not utilising any form of modern contraceptive method after delivery. Consequently, it is observed that a significant proportion of pregnancies in Ghana, specifically 37%, are categorised as unintentional. Within this subset, 23% are classified as mistimed, while the remaining 14% are deemed undesirable (GSS, GHS, & ICF, 2015; Sedgh, 2010; as cited in Nyarko, 2019). A significant proportion of these unintended pregnancies culminate in the termination of the pregnancy through abortion. According to research conducted in Ghana, there was an annual recording of 1,330,000

conceptions between 2015 and 2019. Out of these births, 741,000 (56%) were identified as unplanned, while 266,000 (36%) resulted in abortion (Bearak et al., 2022). The study conducted by Bearak et al. (2022) also presented findings that included a report on the subregion of Ghana, revealing an annual abortion rate of 42%. The majority of these abortions are performed in situations that do not meet established safety standards. According to Ganatra et al. (2014), "unsafe abortion" is the deliberate termination of a pregnancy by those who lack the necessary training in a setting that does not adhere to basic medical standards.

Based on the findings of the Ghana Medical Association report, it has been determined that a range of 15% to 30% of maternal fatalities in Ghana can be attributed to the practice of unsafe-induced abortion (Rominski & Lori, 2014). The research carried out in Ghana by Nyarko and Potter (2020) and Boah et al. (2019) further supports the widely held belief that unsafely-induced abortion is the main cause of maternal mortality in the nation. Specifically, Nyarko and Potter (2020) found that 25% of maternal deaths were attributed to this practice, while Boah et al. (2019) reported a higher percentage of 32.5%. In furtherance, findings of the 2017 Ghana Maternal Health Survey (GMHS) report revealed that the Brong Ahafo area exhibited the fourth-highest prevalence of abortion incidents (20.1%) among women within the reproductive age group. Research conducted at the Berekum district hospital similarly found that abortion complications were the primary factors contributing to maternal mortality (Rominski & Lori, 2014). The women provided several reasons for seeking abortion, including the desire to pursue further education or maintain employment, the intention to postpone future

pregnancies, the need to manage or restrict the number of children, financial challenges, societal stigmatisation of unmarried women, and insufficient support from partners (Chae et al., 2017). According to Bankole et al. (2015), the main underlying factor causing the majority of abortions is unintended pregnancy. Hence, promoting the utilisation of modern contraceptive methods in the immediate postpartum period will facilitate the effective spacing of deliveries and prevent unintended pregnancies that may otherwise result in induced abortions. Previous studies indicate that the utilisation of effective modern contraceptive methods is crucial in light of the significant prevalence of unmet contraceptive needs and the elevated maternal mortality rates resulting from abortion and other complications connected with pregnancies occurring at short intervals in Ghana.

Eliason (2018), Jalango et al. (2017), and Adofo (2014) are just a few of the many studies on contraceptive use among postpartum mothers. Nevertheless, there exists a gap of knowledge about modern contraceptive methods among postpartum women in the immediate postpartum period, which spans from the day of delivery to 8 weeks postpartum. Hence, the current study.

Purpose of the Study

The purpose was to investigate factors influencing modern contraception use among immediate postpartum women in the Sunyani municipal area of the Bono Region of Ghana.

Research Questions

1. What is the knowledge level of immediate postpartum women in the Sunyani municipal area of the Bono Region on modern contraceptive

methods, and how do they influence the use of modern contraceptives after delivery?

2. What is the influence of attitude of immediate postpartum women in the Sunyani municipal area of the Bono Region towards modern contraceptives use after delivery?
3. What is the maternal healthcare services obtained at the hospital by the immediate postpartum women in the Sunyani municipal area of the Bono Region on utilising modern contraceptives after delivery?
4. What are the differences in the use of modern contraceptive methods after delivery between urban and rural immediate postpartum women in the Sunyani municipal area of the Bono Region ?
5. Which socio-demographic variables (age, education, working status, religion, marital status, parity, number of live children, desire for more children, and sex preference) predict the use of modern contraceptives after delivery among immediate postpartum women in Sunyani municipal area of the Bono Region ?

Significance of the Study

The findings of the study could lend support to the government of Ghana and various non-governmental organisations in their pursuit of Sustainable Development Goal 3. This particular target has a focus on securing healthy lives and wellbeing for individuals of all ages. More specifically, it involves the reduction of the maternal mortality ratio to less than 70 per 100,000 live births, the eradication of preventable deaths amongst newborns and children below 5 years of age, and the reduction of neonatal mortality to 12 per 1,000 live births and under-5 mortality to 25 per 1,000 live

births. To achieve these objectives, it is crucial to increase the prevalence rate of postpartum modern contraceptive usage amongst women of reproductive age to prevent unplanned pregnancies, maternal and neonatal deaths, and child deaths.

The study could alert and enable health professionals, specifically doctors, midwives, family planning and public health nurses, to develop new strategies to intensify a persistent comprehensive health education programme on modern postpartum contraception in the Bono Region of Ghana. The findings would also provide empirical data on how postpartum women accept and use modern contraceptive methods, knowing postpartum women and having better insight into how decisions are made concerning using modern contraceptives in the immediate postpartum period

The study findings could help nurses and other health service administrators formulate and be dedicated to policies that ensure that modern postpartum contraception information and services are implemented and strictly monitored for their progress and evaluation. The policy would not only prevent unwanted or mistimed pregnancies and abortions and control high fertility but would also improve maternal and child health in Ghana. Again, the Ministry of Health and Ghana Health Services, in collaboration with the Nursing and Midwifery Council of Ghana, will review the training strategies of family planning and public health personnel based on the study's findings to address the challenges surrounding the use of modern contraception in the immediate postpartum period.

In addition, the study would contribute to the empirical literature on modern postpartum contraception in the immediate postpartum period.

Delimitation

1. This study focused on postpartum women aged 14–49 seeking maternal healthcare services during their immediate postpartum period. The study was conducted in eight healthcare facilities situated within the Sunyani Municipal Area of the Bono Region in Ghana. These facilities included four hospitals in the regional capital and four district healthcare facilities: Bono Regional Hospital, SDA Hospital, Sunyani Municipal Hospital, Owusu Memorial Hospital, Nsoatre Clinic, Chiraa Clinic, Kwatire Clinic, and Fiapre Health Centre. The study involved seven public healthcare facilities and one private healthcare facility. The utilisation of these healthcare facilities is motivated by the provision of maternal healthcare services, which are antenatal clinics, delivery services, and postnatal clinics.
2. The study also focused on the utilisation of modern contraceptive methods during the immediate postpartum period, with a specific focus on excluding traditional contraceptive methods and extended postpartum periods. Several variables may influence the utilisation of modern contraceptives after delivery. The independent variables encompassed the knowledge level, attitude, utilisation of maternal healthcare services, and demographic characteristics that could impact the usage of modern contraceptive methods. The dependent variables were categorised as either use or non-use of modern contraceptive methods among immediate postpartum women.
3. The study adopted a quantitative approach, using a cross-sectional design, and employed a multistage sampling method strategy. Questionnaires

were used as a means of data collection. The statistical tools used for data analysis included frequencies, means, the Pearson Chi-square test, and a binary logistic regression model.

Limitations

The utilisation of self-administered questionnaires introduced challenges with honesty in response, leading to the possibility of over- or under-reporting data. Furthermore, the generalisation of the findings is limited because the study was done at selected health institutions and included only women in their immediate postpartum period. The exclusion of women in their extended postpartum period and other health institutions providing maternal healthcare services restricts the generalisability of the study's results to a broader population. There could be sampling bias since the participants were not selected randomly from a larger population. The study did not consider the husbands' perspectives, which could have shed light on why their partners did not use modern contraceptive methods in the immediate postpartum period.

Definition of Terms

Unintended Pregnancy: Pregnancy that is either mistimed or unwanted (Sedgh & Hussian, 2014).

Unmet Contraceptive Need: Women who need modern contraceptives but are not using them (GSS, GHS, & ICF Macro, 2015).

Postpartum Woman: Any female who has delivered and is between 14 to 49 years old.

Immediate Postpartum Period: This study defines the period postpartum women seek care, typically from day 1 to 8 weeks post delivery.

Maternal Healthcare Services: This study defines the concept as various cares received by women during pregnancy, delivery and after delivery.

Modern Contraception: Any modern ways or devices used to prevent pregnancy from occurring.

Postpartum Modern Contraception: It uses modern birth control measures to prevent pregnancy from occurring immediately after delivery and the return of fertility within eight weeks.

Sunyani Municipal Area: This covers Sunyani East Municipality and Sunyani West District Assembly.

Urban Area Institution: Health institution with higher medical amenities under Sunyani East Municipality.

Rural Area Institution: Health institution with lower medical amenities under Sunyani West District Assembly.

Organisation of the Study

The study comprises five chapters; one, two, three, four and five. Chapter one involves the Background of the study; Problem statement; Purpose of the study; Research questions; Significance of the study; Delimitations of the study; Limitations of the study; Definition of terms, and Organisation of the chapter. Chapter two looks at the literature review made up of: Theoretical framework and an Empirical review. Chapter three deals with research methodology, which comprises research design; Study area; Population; Sampling procedure; Data collection instruments; Data collection procedures, Data processing and analysis, and Chapter summary. Chapter four looks at the results presentation and discusses the study's findings. Chapter

five deals with a summary, conclusions, and recommendations based on the study findings.

CHAPTER TWO

LITERATURE REVIEW

This study aimed to investigate women's modern contraception usage in their immediate postpartum period in Sunyani Municipal Area, Bono Region of Ghana. The study further examined the knowledge level, attitude, maternal healthcare services, geographical locations, and socio-demographic factors influencing modern contraceptive use in the immediate postpartum period. A literature review related to the study was done to determine the extent to which theory and empirical research have been developed about the topic of the study, examine elements of research used by others, and identify gaps needed to support the study. In reviewing the literature, databases were searched for articles on the topics, particularly Pubmed, CINAHL, Google Scholar, Ebosco, and ScienceDirect. The review of related literature was organised under the following headings:

1. Conceptual Review
2. The theoretical framework for contraceptives
3. Knowledge level of modern contraceptive methods
4. Attitudes of postpartum mothers towards modern contraception
5. Maternal healthcare services and modern contraceptive use
6. Geographical location of postpartum women and modern contraceptive use
7. Socio-demographic factors and modern contraceptive use
8. Conceptual framework
9. Summary

Conceptual Review

Family planning

The World Health Organization (2017) defined family planning as deciding on a desired family size, beginning and stopping childbearing, and the amount of time to pass between pregnancies. A couple engages in family planning when they make an informed decision about whether to have children, how often to have children, how far apart to have children, and any other factors that may affect their family dynamic (Tukue et al., 2020). Pills, female and male sterilisations, IUDs, injectables, implants, condoms, diaphragms, and emergency contraceptives are all examples of modern contraception. Withdrawal, abstinence, and alternative approaches are all examples of traditional forms of birth control (Khan et al., 2007). Effective use of modern family planning methods provides five essential needs: (I) saves lives; (II) empowers mothers; (III) reduces the spread of sexually transmitted diseases; (IV) helps reduce rates of abortion and infertility; and (V) helps couples avoid unplanned pregnancies, helping individual teams obtain smaller family sizes (Institute of Medicine [IOM], 2009). Smaller families and sufficient interpregnancy intervals helped improve the socio-economic and health statuses of mothers, infants, and their families by reducing maternal and infant morbidity and mortality rates through family planning to prevent unplanned pregnancies and their associated complications.

The societal cost of unintended pregnancies is high (Ranatunga & Jayaratne, 2020). Lack of access to contraception, failure of chosen contraceptive techniques, lack of contraceptive use, and a lack of motivation to avoid pregnancy all play a role in the prevalence of unintended pregnancies.

The goal of reducing the number of unintended pregnancies is central to the 2030 Sustainable Development Goals. Achieving universal access to modern contraception, lowering the rate of maternal and newborn mortality, and putting an end to the HIV epidemic are all part of the 2030 health-related Sustainable Development Goals. These SDG targets will be achieved if there is an improvement in access to sexual and reproductive health services, including the utilisation of modern family planning through the implementation of the Family Planning 2020 strategy (Kuruvilla et al., 2016).

Postpartum

After the birth of a baby, there is a six-week period known as postpartum or puerperium (Finlayson et al., 2020). The postpartum period, which typically lasts between six and eight weeks, is when the mother's body returns to its pre-pregnancy state physiologically (Chauhan & Tadi, 2022). There are three distinct times in the postpartum period: (I) the acute phase, which occurs within the first 12–24 hours after placenta delivery and may involve rapid changes and a potential crisis for the mother; (II) the early phase, which lasts up to 7 days and during which the mother's vital organs gradually return to their pre-pregnancy state; and (III) the late phase, which occurs between 7 days and 6–8 weeks but may last as long as 6 months after delivery (Chauhan & Tadi, 2022). There are two key parts to the postpartum time frame: the extended and the immediate. Postpartum women are encouraged to take it easy for a full year. The first six weeks after giving birth are considered part of the immediate postpartum period. At these times, it is common knowledge that mothers are more likely to become pregnant again (Mengesha et al., 2015; HIP, 2017).

As early as six weeks after giving birth, postpartum women are at risk of having an unintended pregnancy (Nakiwunga et al., 2022; Moore et al., 2015). According to a report by the American College of Obstetricians and Gynaecologists (ACOG), roughly 57% of postpartum women engaged in unprotected sexual intercourse within the first six weeks after giving birth, putting them at increased risk for short-interval pregnancies and the potentially fatal complications that come with them. A pregnancy that occurs less than 12 months after the previous birth is considered to have a short interval (Borders & Stuebe, 2016). Complications of having short-interval pregnancies include stillbirth, low birth weight, preterm birth, small for gestational age babies, complications of pregnancy, and maternal and infant mortality (Gurmu et al., 2022). SDG 3.2 by 2030 aims to end avoidable deaths of neonates and young children under five years of age, with the purpose of all countries recording a low rate of neonatal deaths, at least 12 per 1,000 live births (UN, 2015). To achieve the SDG 3.2 target, short-interval pregnancies should be prevented by using modern contraception during the immediate postpartum period.

Maternal healthcare services

Maternal health encompasses a woman's physical, mental, emotional, and social well-being before, during, and after pregnancy (WHO, 2017). WHO widened the definition of maternal health to eliminate maternal morbidity and mortality. When a mother suffers from maternal morbidity, it worsens her health and that of her child during pregnancy and after delivery. Regardless of where a pregnancy occurred, maternal mortality is the rate at which women die during or shortly after pregnancy, childbirth, or the puerperium period.

Maternal healthcare service refers to pregnancy-related services provided to women before and during pregnancy, delivery, and the postpartum period by a healthcare professional that relate to (I) the diagnosis, prevention, or treatment of any diseases or impairments; and (II) the assessment of the health of the women (WHO, 2017). Maternal healthcare services encompass ANC, delivery care, and PNC (Amour et al., 2021).

Expert healthcare practitioners offer antenatal care to expectant mothers to help discover and treat any issues as early as possible in the pregnancy (Ali et al., 2020). According to Ajayi et al. (2018), attending ANC encourages the use of modern contraceptives. Moreover, Negash et al. (2022) found that when ANC is followed up on, mothers are more motivated to use contemporary contraceptives after delivery, which helps avoid unintended pregnancies and lowers the risk of baby and maternal mortality.

Women in labour receive medical attention from trained professionals. Medical assistance during labour and delivery lowers the risk of death for mothers and infants (Thapa, 2020). Several studies have demonstrated that women who receive delivery care are more likely to use contemporary contraception. These ladies avoid unwanted pregnancies and premature deliveries using current birth control methods (Dagnew et al., 2020; Thapa, 2020; Tessema et al., 2018).

Women and newborns receive postnatal care after delivery of the placenta and throughout the first six weeks of life (Mihretie et al., 2020). Research shows that maternal and newborn mortality might be prevented by adequate postnatal care services (Kruk et al., 2018; Salam et al., 2014). Postpartum haemorrhage, eclampsia, infection, and uterine rupture are among

the leading causes of maternal mortality. Infection, birth asphyxia, premature birth, and low birth weight are other major contributors to the premature death of neonates (Sumankuuro et al., 2017). Increased utilisation of modern contraceptives during the PNC period would decrease the occurrence of infants and maternal mortalities by preventing short-interval pregnancies, unplanned pregnancies, the number of unsafe abortions, and the proportion of unplanned births (Mihretie et al., 2020; Do & Hotchkiss, 2013).

Theoretical Framework on Contraceptives Use

The theories reviewed in this study include the Theory of Planned Behaviour (TPB), the Health Belief Model (HBM), and the Knowledge-Attitude-Practice Model (KAP). HBM plays a crucial role in people accepting persuasion, changing bad behaviour, and adopting healthy behaviour. The KAP model was used because knowledge serves as the foundation of behaviour change, while attitude is the driving force of behaviour change. Again, to predict and better understand modern contraceptive usage among postpartum women in the immediate period, the HBM and KAP theories and models were used to guide this study. The two theories combined were used because they remain the most recognised and used models for changing health-related behaviours. These models are a good fit for addressing all behavioural change problems in modern contraception that other theories did not consider.

Theory of Planned Behaviour

To predict and understand people's health-related behaviour, Ajzen (1991) introduced the Theory of Planned Behaviour (TPB), originally called the Theory of Reasoned Action (TRA), in 1980. This theory holds that

behaviour is determined by the person's desire to conduct behaviour in a certain situation.

The idea aimed to explain all behaviours that individuals can choose to change. A person's attitude and the possibility that the behaviour done will have the intended consequence are both important factors in shaping the person's behaviour intentions, as are the benefits and hazards associated with the behaviour. According to the TPB, one's capacity for successful behaviour stems from willpower and goal-setting (Ajzen, 1991). The six ideas that make up TPB are as follows: attitude, behavioural intention, subjective norms, societal norms, perceived power, and perceived behavioural control. Later, a subset of the TRA devoted to perceived behavioural control was separated and added to the TPB. Although there are six dimensions in TPB, intention towards attitude, subject norms, and perceived behavioural control are the most important in determining whether or not someone will act on their intentions. The degree to which an individual values the targeted behaviour positively or negatively, as described by Ajzen (1991), indicates that person's attitude towards it. A person who does so thinks about the consequences of their actions, whether good or bad. The advantages and disadvantages of contemporary contraception would influence a woman's perspective on its use. Subjective standards are influenced by how people see society's norms and how well they can follow them.

Subjective norms, as defined by Ajzen, reflect an individual's assessment of whether the majority of people approve or disapprove of a given behaviour and the extent to which the individual sees the importance of performing a given behaviour in his or her life situation (motivation to

comply). A woman's perceptions of what her co-workers, husbands, and relatives would say and think about her choice to use modern contraception are examples of subjective norms. According to Ajzen (1991), PBC refers to an individual's estimation of the difficulty (or ease) with which they can carry out a given behaviour. In PBC, people will complete an action if they feel they have a good handle. For example, a postpartum woman who is well-informed about and has access to all available modern contraception techniques is likely to use them. Perceived behavioural control (PBC) fluctuates across contexts and acts; therefore, an individual's sense of whether or not they have control over their behaviour also varies. The PBC comprises two components: confidence in one's ability to exert that power and the conviction that one can. An individual's perception of his or her power, or the presence of external factors and conditions that either facilitate or impede the performance of the behaviour, is called perceived power. A person's perception of their control over their behaviour is influenced by their sense of autonomy (Ajzen, 1991).

The use of TPB has been supported by numerous empirical studies. TPB was applied, for instance, to examine hormonal contraceptive use among pharmacy school students. The results showed a statistically significant connection between the contraception attitude variable and the intention to counsel. However, there was no substantial relationship between counselling intention and knowledge, subjective norms, or perceived behavioural control (Hohmann & Kavookjian, 2018). Teenage girls' intentions to use modern contraceptives in Kpando Municipality, Ghana, were studied by Der et al. (2021), who also used the TPB. The results showed that the likelihood of

someone intending to take modern contraceptives was significantly related to their belief that they could control their behaviour. Kiene et al. (2014) found that in order to increase the use of contraception, theory-based treatments needed to be enhanced.

Though TPB has been widely successfully applied in a health-related field, it has limitations. TPB assumes that an individual has acquired the opportunities and resources to successfully perform the desired behaviour, paying less attention to the individual's intention. The theory does not consider socio-demographic variables like fear, threat, mood, or experience that factor into behavioural intention and motivation. In addition, economic or environmental variables that might influence individuals' intention to perform a behaviour were not considered by the TPB model. The theory needs to be more explicit about perceived behavioural control, as it does not say anything about actual control over behaviour.

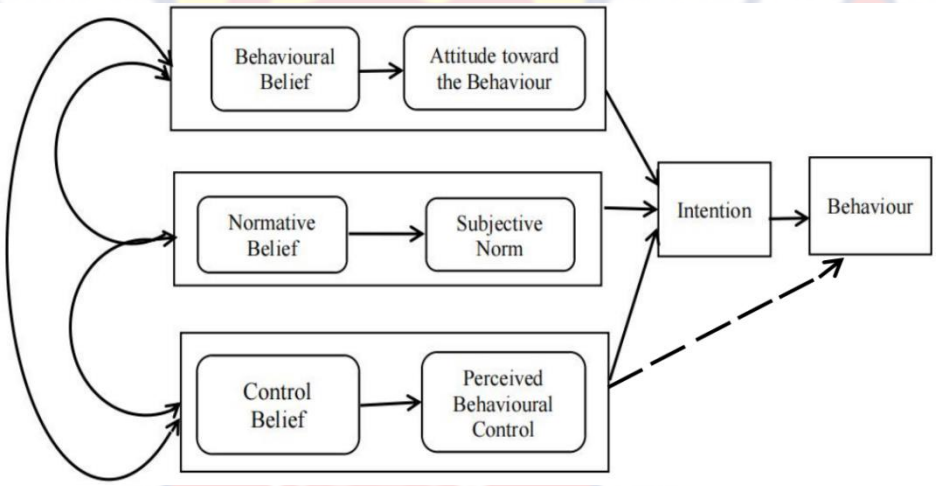

Figure 1: Theory of planned behaviour (Ajzen, 1991)

Health Belief Model

The health belief model is a framework that explains people's health-related behaviours, such as healthcare use and compliance with a medical

regimen. It is acknowledged that individual decisions surrounding fertility, pregnancy, and contraception are heavily influenced by the marital partner, immediate family members, and cultural beliefs and norms. This study focuses on the opinions and perceptions of women in their immediate postpartum period as a means to gain a better understanding of modern contraceptive use and non-use.

One of the theories utilised in health education and health promotion is the health belief model, as described by theoretician Rosenstock (1974). To explain the failure of medical screening programmes offered by the United States Public Health Service, particularly for tuberculosis (TB), a group of social psychologists in the 1950s created the HBM model. Adults were eligible for free TB screenings through the programme, but only a fraction took advantage of the offer. The programme's organisers began investigating why fewer adults attended the screening and what inspired those who did. The study's findings showed that individuals were significantly motivated by their assessments of the risks associated with not taking preventative measures and the rewards they expected to reap (Hochbaum et al., 1952; as cited in Leone et al., 2017).

The underlying concepts of HBM are that health behaviours are determined by personal beliefs and perceptions about disease and strategies available to reduce its occurrence. For instance, if an individual feels that an adverse health condition such as postpartum bleeding, which leads to severe maternal sickness and death, can be avoided, they will comply with the health-related behavioural change. Again, if the person has favourable feelings that when the right recommended steps are taken, she will not develop an adverse

health condition, that person would take those steps. For instance, if a postpartum woman realises that using effective modern contraceptives would prevent unplanned pregnancies with associated complications, she would use the recommended modern contraception.

Personal perception is influenced by a whole range of intrapersonal factors affecting health behaviour. The health belief model was initially developed into four primary constructs: perceived susceptibility, severity, benefits, and barriers. These constructs were proposed as accounting for people's "readiness to act," with an added concept of cues to action added to activate that readiness and stimulate overt behaviour. Rosenstock added the concept of self-efficacy in 1988 to account for one's confidence in the ability to act successfully. Finally, modifying variables that indirectly affect health-related behaviours was added to the six constructs. These developments have increased the total constructs to seven: perceived susceptibility, perceived benefits, perceived barriers, perceived severity, cue to action, self-efficacy, and modifying variables.

Perceived Susceptibility: This refers to a personal feeling of the risk of acquiring diseases or getting sick.

Perceived Severity: This refers to an individual perceiving the seriousness of contracting or leaving the illness or disease untreated.

Perceived Benefits: This refers to an individual's views or feelings about the effectiveness of various procedures to reduce threatening diseases.

Perceived Barriers: This refers to an individual's views on the drawbacks or blockade of a recommended health action.

Cue to Action: This refers to a stimulus that triggers the decision-making process to accept a recommended health action.

Perceived self-efficacy: This refers to a person's conviction in his or her ability to perform behaviour successfully.

Modifying Variables: This refers to individual characteristics, including socio-demographic, psychosocial, and structural variables, which can affect perceptions of health-related behaviours. Socio-demographic variables include age, sex, race, education, marital status, social class, peer and reference group pressure, and family members. Structural variables include knowledge about a given disease or situation and prior contact with the condition.

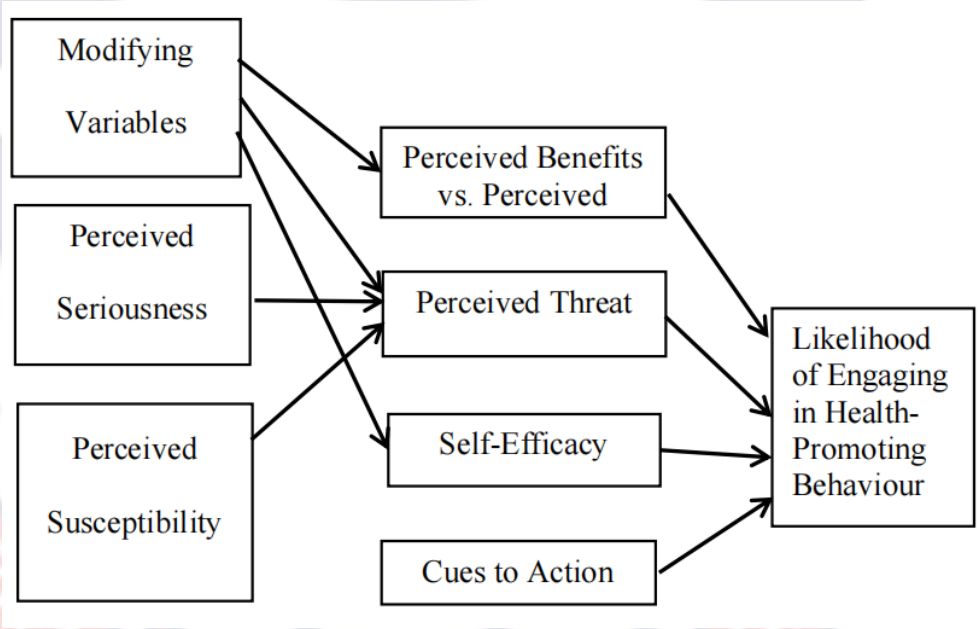

Figure 2: The health belief model (Urich, 2017)

The use of the health belief model in this study is explained through six of the seven constructs. The explanation is as follows:

1. **Perceived Susceptibility:** This is when postpartum women acknowledge the risk of getting unplanned pregnancies when not using modern contraception after delivery. Perceived susceptibility was

measured by asking respondents the following questions "currently, are you using any modern contraceptive methods?" "Are you currently using a method you chose after the ANC counselling?"

2. **Perceived Benefits:** This is where postpartum women assess the value or efficiency of using modern contraception after delivery to decrease the risk of unplanned pregnancies. Perceived benefits were measured in the study by asking, "if you are currently using a modern contraceptive method, what influenced your decision to use the method?"
3. **Perceived Barrier:** Refers to respondents' assessment of the obstacles to using modern contraception. If the postpartum woman perceives the non-use of modern contraception as threatening, barriers may prevent her from using modern methods. Examples of barriers to postpartum contraceptive use include religious beliefs, indecision on which modern contraceptives method to use, transportation to the healthcare facility, fear of side effects, breastfeeding, misconception, infrequent sex, spouse or other extended family disapproval of using contraceptives, economics, peer pressure and desire for another pregnancy. A perceived barrier was measured by asking, "if you are not using any modern contraceptive methods, what influenced your decision?"
4. **Cue to Action:** This is where postpartum women's decision-making process to accept modern contraception in the postpartum period is triggered by internal and external cues. Postpartum women remembering their previous pregnancies and delivery experiences

would lead to the use of modern contraceptives after delivery. Again, receiving family planning counselling or information from midwives, public health nurses, doctors, newspapers and media would lead to the use of the methods. In the study, cue to action was measured based on the following questions "did you receive any information on modern contraceptive methods at ANC?", "did you receive counselling on family planning after delivery?" and "at the postnatal visit, were you provided with information on modern contraceptive methods?"

5. **Perceived Self-efficacy:** In the study, perceived self-efficacy was measured by asking postpartum women this question "if currently using a modern contraceptive method, which forms of modern contraceptives are you using?" Responses to this question showed the confidence level of postpartum women in using modern contraceptive methods to prevent unplanned pregnancies.
6. **Modifying Variables:** In the study, individual characteristics, including sociodemographic variables like age, religion, parity, education, marital status, working status, number of live children, desire for more children and sex preference, were used. Again, structural variables such as knowledge, attitude, maternal healthcare services and geographical location of postpartum women were used to determine factors influencing modern contraceptive usage after delivery.

With the wide use of HBM in empirical studies, it has been criticised for having some limitations. The HBM does not consider a person's attitudes, beliefs, or other determinants that direct a person's acceptance of health

behaviour; environmental or economic variables that may impede or promote recommended actions were not considered. The HBM ignores habitual behaviours that may influence the mindset of people to accept recommended steps and actions. Again, the model pays no attention to behaviours performed for non-health-related reasons. The HBM seems to assume that every individual has access to an equal level of education on the illness or disease and also presumes that cues to action generally encourage individuals to act and that "health" actions are essential in the decision-making process.

Knowledge-Attitude-Practice Model

The Knowledge-Attitude-Practice (KAP) health education model, also known as the rational model, was developed in the 1950s in family planning and population studies. The KAP model is a framework to investigate different populations' health-related behaviour and health-seeking practices and to provide information on the knowledge, attitudes, and practices in family planning that could be used for programme purposes worldwide (WHO, 2012). The KAP model process was developed from Bandura's learning theory (1976) and Roger's diffusion of innovation theory (1995). According to Bandura, individual behaviours are learned through social context, and Roger also stated that members of a social system accept innovation through four stages over time. The four stages include knowledge acquisition, persuasion, decision, and confirmation.

In the KAP health education model, educational strategies target individuals and groups to encourage them to strive positively and prevent adverse health behaviour choices. For instance, they empower postpartum women to use modern contraceptives after delivery to prevent unplanned

pregnancies. The KAP health education model works because when a person increases his or her knowledge, it leads to a behavioural change. The KAP model also assumes that ignorance is the only obstacle to acting "responsibly" and rationally and that information alone can influence behaviour by "correcting" this lack of knowledge. Changing human behaviour under the KAP model has been divided into three processes: acquisition of knowledge, affective attitudes, and practices.

Knowledge acquisition refers to the individual obtaining and understanding information and skills for survival; affective attitudes serve as a driving force of behavioural change; and practice refers to regular activities influenced by widely shared social norms and beliefs.

Previous empirical studies have identified many interconnections among knowledge, attitudes, and practices in family planning. Knowledge of contraception and a positive attitude are required for behavioural change (Krenn et al., 2014). Another study by Semachew et al. (2018) found that 42.3% of respondents had good knowledge, 58.8% had a positive attitude, and 50.4% had good practice towards family planning. The authors concluded that increasing knowledge and a positive attitude lead to excellently practising contraception. A similar finding of a study by Wani et al. (2019) revealed that knowledge and attitude towards family planning were relatively low, and contraception utilisation was quite low. The finding implies that when there is inadequate knowledge and a negative attitude, it negatively affects the practice of contraception. The KAP model has been used successfully for years. However, people have criticised the idea that knowledge alone cannot predict attitudes and practices.

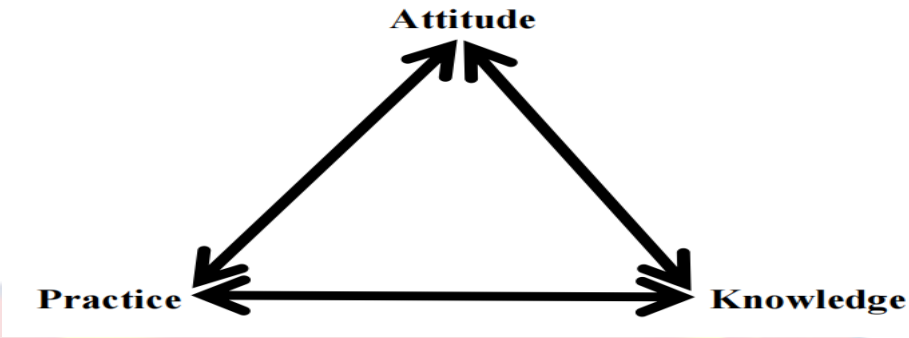

Figure 3: Knowledge-Attitude-Practice model (Bano et al., 2013)

Empirical Literature Review

Knowledge level of modern family planning methods

Several studies have reported on how knowledge levels influence the utilisation of modern family planning methods. Research in Europe and America showed that, generally, there was good awareness and knowledge of most methods of contraception. A study was done to find out how well-informed and how often 2,544 women used contraceptive methods in the US, UK, Germany, Italy, and Spain. The finding showed more than 98% awareness of all types of contraception, with the oral pill method being the most commonly known and the first contraceptive method to come to mind when thinking about family planning by women in all the countries: the U.K., 72%; Germany, 76%; Spain, 51%; Italy, 59%; and the USA, 63%. However, knowledge levels on many non-hormonal family planning methods apart from male condoms were low (Johnson et al., 2013).

More than 30% of women in additional research on contraception in economically disadvantaged parts of five Central American countries reported having no knowledge of modern methods of birth control. Women were found to be familiar with an average of fewer than two current forms of contraception, with short-acting hormonal methods being the most common.

Women in low-income areas were found to have the least amount of information regarding birth control, leading the authors to draw the conclusion that this topic was largely unknown (Rios-Zertuchea et al., 2017). A similar poll found that 81% of Poles who were asked about their familiarity with various methods of birth control reported being either very familiar with or familiar with all of the methods. Seventy-two percent of respondents, regardless of the type of school they attended, named condoms as their most familiar and preferred method of birth control. They had a low level of understanding of hormonal contraceptives (12%). For example, Skrzeczkowska et al. (2015).

Bajracharya (2015) conducted a cross-sectional observational study in Nepal to assess the knowledge, attitudes, and use of various contraceptive methods among 400 women who attended the postnatal clinic for follow-up after giving birth. The majority of respondents (90.8%), who were asked about their knowledge of contraception, reported being familiar with at least one method. Most people were familiar with condoms (84%), oral pills (82%), and injectables (71.5%) as methods of birth control. An identical cross-sectional study was undertaken at an Indian university to examine postpartum women's knowledge, attitudes, and factors influencing their future use of contraception for birth spacing. Researchers found that 70% of the women surveyed were familiar with some method of birth control. Despite this, only 30% of respondents showed enough knowledge on when and how to use modern methods of contraception, leading to a use rate of less than 35%. (Sharma et al., 2015). These findings illustrated the need for more than just evaluating respondents' awareness of a method to conclude that there is knowledge.

Also, in a government hospital in Maharashtra, India, Rokade and Hanji (2018) assessed postpartum women's knowledge of several forms of contraception through prospective research. The survey found that among the 4,860 postpartum women who participated, 97% were familiar with at least one kind of modern contraception, with female sterilisation coming in at the top (91%). Another study in India examining the link between women's education and contraceptive use was conducted by Singh et al. (2016). More than 99% of women in all six major cities of Uttar Pradesh had heard of at least one kind of contraception, which was true regardless of education level or socioeconomic status. While respondents overall had a higher level of awareness about contraceptives, this knowledge varied among the methods used and geographical locations.

Similarly, in a study looking at the prevalence of use, knowledge, and attitudes towards family planning, 90.1% (n=727) of respondents were familiar with at least one form of contraception. Oral contraceptive pills and intrauterine devices are women's most common forms of birth control. Several respondents indicated they would like further explanation regarding family planning, which is also reflected in the results. According to nearly 36.9% of respondents, family planning means a longer interval between children's births than the 24.8% who felt it meant fewer births overall.

According to research conducted in East African countries, a very high percentage of the population is familiar with various forms of family planning. Most men were familiar with male condoms (98.3%), making them the most popular form of male-initiated family planning (Alege et al., 2016). Jalang'o et al. conducted a cross-sectional study at the maternity and child health clinics

at Kisii Level 5 hospital to identify barriers to contraceptive usage among postpartum women in rural Kenya (2017). A total of 365 postpartum women were surveyed using pre-designed questionnaires; they had all brought their children (18–24 months old) for their second measles vaccination. About a year after giving birth, 86.3% of the women had used some modern family planning, and 98.2% had learned about modern contraception from medical professionals (Jalang'o et al., 2017).

Gondar City in northwest Ethiopia was studied to assess postpartum contraceptive knowledge and influencing factors. The majority of women (99.5%) reported being aware of postpartum contraception, with 74.2% (n=299) demonstrating an excellent understanding of available options. The study also found that respondents' extensive familiarity with modern methods of birth control was bolstered by their being urban dwellers, having used a modern method of birth control in the past, giving birth in a healthcare facility, and receiving family planning counselling as part of their postnatal care (Mekonnen et al., 2021). On the other hand, a second study on the same topic in Northwest Ethiopia found that 100% of respondents were aware of these strategies. Nonetheless, just 42.3% were well-informed, while 57.7% showed gaps in their knowledge. The findings revealed a generally poor level of familiarity with modern methods of family planning (Semachew Kasa et al., 2018).

In West Africa, a survey was done. Women in Burkina Faso, Côte d'Ivoire, Ghana, Niger, and Nigeria were surveyed on their knowledge of and motivations for using contemporary contraceptives. More than a third (37%) of young women in each of the five countries surveyed reported having an

above-average understanding of modern methods of contraception. This percentage ranged from 52% in Cote d'Ivoire to 44% in Burkina Faso, 44% in Ghana, 37% in Niger, and 45% in Nigeria. This result suggests that most young women in the five nations studied (with the exception of Cote d'Ivoire) could benefit from learning more about current methods of contraception. Results also demonstrated that respondents' overall awareness of contemporary contraception was statistically significant across all five nations surveyed. Those with more information about modern contraceptives are more likely to use them than those with less information (Olagunju et al., 2020). After visiting a postnatal clinic in Ayeka, Obalase and Joseph (2017) surveyed women in the Ondo State of Nigeria who had recently given birth to ascertain their level of knowledge. The results showed that the respondents knew a lot about modern family planning methods. Among the 200 people polled, 355 (or 35.5%) were familiar with condoms as a method of birth control, making them the most widely known method. The results also found that 73.5% of respondents used current contraception.

A study by Osaro et al. (2017) to assess rural women's knowledge of modern contraceptive methods and their use in the Rivers State of Nigeria revealed that 99.5% of the respondents had heard of modern contraception, which is the highest percentage. However, only 63.0% of respondents had sufficient awareness of contemporary contraceptive methods, and only 36.8% reported using them. The results also showed that injectables (50.0%) and male condoms (67.1%) were the most well-known methods. A similar survey was conducted in southern Nigeria to assess respondents' familiarity with contemporary contraceptive techniques and their adoption. The findings

showed that most respondents (97.4%) were thoroughly aware of contemporary contraceptive methods but that usage rates needed to be higher. The most common means of contraception that respondents were aware of and utilised were tablets and condoms (34.4%) (Agbo et al., 2020).

Ukegbu et al. (2018) examine the primary factors linked with the pattern of contraceptive usage among 232 Nigerian women aged 15 to 49 in the city of Umuahia, Delta State. According to the research, the vast majority of respondents (96%) were aware of contraception. Condoms (58%) and oral pills (47%) were the two most well-known contraceptive techniques. Nonetheless, respondents' understanding of contraception options may have been significantly more in-depth. Just 12.5% of respondents had an adequate understanding of contraception methods. Research conducted in Nigeria on the knowledge, attitude, and use of emergency contraceptives concluded that most respondents (86.5%) had adequate knowledge of emergency contraceptives. More than half of respondents (58%) identified postinor-2 as the most prevalent emergency contraception (Onasoga et al., 2016). Instead of asking respondents only about emergency contraception, the authors of the study may have asked about all modern contraceptive techniques, which would have made the study's conclusion less skewed.

A cross-sectional analysis of modern contraception use was undertaken by Beson et al. (2018) at Ghana's Lekma Hospital. Ninety-eight percent of respondents were aware of and familiar with modern contraceptives, with injectables having the highest familiarity (64.5%) and tablets (61.8%). Hagan and Buxton (2012) did a study along similar lines in the Central Region of Ghana's most modern metropolis, Cape Coast. The results showed that 81.0%

of respondents reported knowing how to use contraception, with 42.3% knowing how to use condoms and 24.3% knowing how to use the oral pill. The study participants should have been asked to elaborate on the proper application of the procedures. Answers to the question would have helped to know whether respondents have proper knowledge of contraceptive methods or not, instead of the respondents just mentioning contraceptive methods. Coomson and Manu (2019) conducted a similar study to examine factors that influence modern contraceptive use among women who had delivered within 3–15 months in Tema Metropolis. The findings showed that 42% of the respondents knew family planning methods, whereas 58% did not. The study's other findings showed that there was a lack of understanding regarding the negative impacts of using modern methods of contraception. Respondents with high knowledge levels were 18%, followed by moderate knowledge levels at 48%, and low knowledge levels at 34%. The results call for comprehensive health education on modern family planning methods in all local Ghanaian dialects for an easy understanding of all issues about modern contraceptive methods.

In Accra's Ga East District, another investigation was conducted to assess community knowledge, perceptions, and factors associated with modern family planning methods and women their reproductive age who had used them. The study found that 97% of people knew about modern contraception. But only 56% of people could name more than three methods. Condoms, pills, and injectables were the most widely known contraceptives, as the research also showed. The results demonstrated insufficient knowledge of other modern contraceptives and how these modern methods are used (Hindin et al., 2014).

A comparable investigation into teenage contraceptive use occurred in Ghana's Kintampo north municipal and Kintampo south districts. The adolescent's capacity to name at least one contraceptive method measured their knowledge about contraception. According to the study's findings, 89% of respondents were aware of at least one type of contraception, with men reporting a higher degree of awareness (92.1%) than women (86.6%). (Boamah et al., 2014). Even though the findings showed a high knowledge level of contraceptives among the respondents, researchers could have probed further about how and when to use the contraceptive methods and how the methods work. Other studies revealed that asking respondents to mention more than one family planning method had recorded a decrease in knowledge level.

Attitude of postpartum women towards modern contraception

Several studies have also shown varying attitudes and the effect of attitudes on modern contraceptive methods. Many Swedish women at risk of unintended pregnancy do not use contraception despite its simple availability and a system with subsidies, according to a study examining contraceptive use and attitudes towards contraceptive use in Sweden. Comparing younger respondents to older women, the findings also revealed that younger respondents do not use contraception (Kopp et al., 2015).

An investigation into the amount of knowledge, attitudes, and factors influencing postpartum women's probable use of contraception was conducted in Asia at a teaching institution in India. The findings showed that 64.6% of postpartum women agreed on spacing their pregnancies between 2 and 3 years. However, 65.8% of these respondents were unwilling to choose and use any

modern contraceptive methods after being taught. The findings also showed that respondents who discussed contraception with husbands had a positive attitude towards contraception usage (Sharma et al., 2015). Parallel to this, a study of married women in Qatar revealed that most respondents (1,070) were aware of contraceptive options. Of the 1,070 respondents who knew of contraceptives, 335.1% had a negative attitude towards their usage due to age, educational level, and abortion history. Women (38.8%) over 30 years were found not to favour contraceptive usage, followed by those (25.8%) aged 40–49 years. Again, the findings indicated that respondents with primary and non-formal education did not favour contraception. Respondents with a history of abortion were more likely to have a negative attitude towards contraception than those with no such history, with a *P-value* < 0.001 (Al-Musa et al., 2019).

Further, a cross-sectional study was conducted in Abha, Saudi Arabia, to evaluate knowledge, attitudes, and contraceptive practices. The results revealed that respondents had a different attitude towards contraceptive usage; the majority (89.2%) would use modern contraception only if their spouses agreed. Approximately 12% of additional women reported unfavourable sentiments due to worry about the methods' side effects (Al-Musa et al., 2019). Also, a survey was conducted in Mosul, Iraq, to examine people's views towards and understanding of contraceptive methods. According to the study, respondents generally had a favourable opinion of contraception. Most respondents, 85.9%, believed that family planning practices benefit maternal health, while 72.8% disagreed that family planning techniques are ineffective (Saied, 2021).

Additionally, a survey done in the Kingdom of Saudi Arabia to examine knowledge, attitudes, and practices related to family planning methods found that 64.1% of respondents agreed to practice family planning, and 44.8% had a favourable opinion about the use of contraceptives. However, 72.3% of the respondents believed modern contraceptive methods had adverse effects. Altogether, 65.4% of respondents had a positive attitude towards contraception (Alsaedi et al., 2018).

Dasanayake and Dilhani (2018) conducted a study at Mahamodara, Galle City, to assess knowledge, attitudes, and practices regarding postpartum contraception. The study showed that most respondents had favourable attitudes and practices towards using postpartum contraception. However, few respondents with unfavourable attitudes and practices towards contraceptive use were due to their religion (9%) and worry of adverse reactions to the methods (44%). Similarly, a study carried out to ascertain the knowledge, attitude, and use of oral contraceptive pills in Jeddah city in the western region showed that older women aged 47 and above had a more positive attitude towards contraception than younger women. However, their knowledge about oral contraceptive pills was low (Shamrani et al., 2017). Ahmed and colleagues (2016) discovered that women generally have a positive attitude towards using modern contraceptives. According to their findings, more than half (55% of respondents) had positive attitudes towards emergency oral contraceptive pills. However, there was a significant number 45% of respondents with negative attitudes. The authors should have studied attitudes towards all the modern contraceptive methods, which would have given a

clearer picture of women's attitudes towards contraception instead of limiting it to only oral emergency contraceptive pills.

In Africa, research by Onasoga et al. (2016) in Nigeria's Niger Delta region in Bayelsa State found that 74.5% of respondents disagreed that emergency contraceptive pills are meant for prostitutes or married women. More than half (56%) of respondents mentioned the use of emergency contraceptive pills to lower the risk of unplanned conceptions and related issues. The authors concluded that most respondents were positive about emergency contraceptive pill usage. Dissimilarly, a study was conducted by Ugoji (2013) using six tertiary institutions in the Delta State of Nigeria to determine attitudes towards contraceptive use. The study's findings showed that respondents had negative attitudes towards modern contraception due to false rumours and misleading information received about modern contraceptive methods. The author could have done extensive work by studying all women of childbearing age instead of adolescents alone. The study's findings would have given more precise information about attitudinal behaviour towards modern contraception practice. Katama and Hibstu (2016) studied the knowledge, attitude, and practice of contraceptive use in South Ethiopia. The results showed that 71.5% (n=178) of respondents had a positive attitude towards contraceptives, though their usage was low. Another study conducted in Ethiopia to evaluate the impact and related factors on the timely initiation of women's postpartum contraceptive use by Dona et al. (2018) found that although 99.7% of respondents had heard about modern contraceptive methods, 52.6% had negative attitudes towards their usage.

In Ghana, a study by Beson et al. (2018) found that most (63%) respondents had a positive attitude towards modern contraceptive use. The likelihood of women having positive attitudes towards modern contraceptives was higher than that of those with negative attitudes. A recent study to assess the attitude of healthcare workers and medical trainees toward modern contraceptive use by Agbeno et al. (2021) revealed a positive attitude of respondents toward modern contraceptive practices. Although they may be sexually active, only 18% of respondents were found to use modern contraception at the time of the survey.

Maternal Healthcare Services and Modern Contraceptives Use

Maternal healthcare services offer a priceless chance to teach and enlighten women about family planning. This is anticipated to encourage women to choose an effective method of contraception and start using it as soon as possible after giving birth (Achyut et al., 2016). Maternal health care services comprise antenatal care (ANC), delivery care, and postnatal care (PNC) services (Ameyaw et al., 2021).

Antenatal and postnatal care

In Turkey, a study was carried out on family planning counselling received during prenatal care and postpartum contraceptive use among women. The study showed that 79.6% of respondents had used contraceptives after delivery. Of the number of women using contraception, 68.7% used a modern contraceptive method. The findings, therefore, imply that receiving family planning counselling during the prenatal care period would increase the use of modern contraception (Mruts et al., 2022; Puri et al., 2020). A similar study was conducted to identify differences between prenatal and postpartum

contraceptive counselling and postpartum contraceptive use. Information was gathered on motherly behaviours and experiences before, during, and after pregnancy from selected states in the United States. The study's findings showed that 78% of respondents received family planning counselling during the perinatal care period, 86% received family planning counselling during the postpartum period, and 72% received it during both periods (Zapata et al., 2015). Additionally, the findings revealed that 85% of respondents used postpartum contraception after receiving counselling. There were increased odds of postpartum women using modern contraception after receiving family planning counselling compared with those who did not receive counselling (Zapata et al., 2015). The finding suggests that when family planning counselling is offered, the prevalence of modern contraceptive use increases.

According to Agha and Williams (2016), though there had been an increased usage of maternal healthcare services, with 80% of Pakistani women attending and receiving antenatal care when pregnant, this increase in the use of maternal healthcare services had not translated into increased usage of modern contraception. An investigation by Agha and Williams (2016) in Sindh province in Pakistan on the effect of ANC on contraceptive use showed that contraception increased with the number of ANC visits. Respondents (32%) who had four or more ANC visits were more likely to use contraception, compared with those (18%) who attended one or three antenatal visits and those (8%) who did not attend any. The findings imply that attending and receiving antenatal care would increase the use of contraceptive methods after delivery.

In Nepal, research by Puri et al. (2021) observed that postpartum women who needed modern contraception but were not using any method were high at 54% (n= 9654) at one year and 50% (n= 8836) at two years after delivery. Also, the findings showed that unmet needs were high among respondents who only received family planning counselling before or after discharge from the hospital. Meanwhile, postpartum women who received family planning counselling at pre-discharge and post-discharge had low unmet needs for the methods: 41% at year one and 43% at year two. The results suggest that postpartum women receiving good family planning counselling before and after leaving the hospital will be more likely to take modern contraception, decreasing unmet requirements (Puri et al., 2021). Similarly, a study conducted in Nepal to determine the impact of postpartum contraception use and maternal healthcare services showed that more than half (58%) of respondents with high ANC visits initiated modern contraception use within a year after delivery. Additionally, the findings revealed that 62% of respondents who delivered at health institutions initiated using modern contraceptives within a year of their last delivery (Dulal, 2015). The implication is that modern contraception use would increase with the extensive and effective use of maternal health care services. The study, however, examined only some of the three components of maternal health care: antenatal care, delivery care, and postnatal care. The authors should have assessed how postnatal care services would have influenced the use of modern contraception after delivery.

Another study by Kafle et al. (2017) on the continuity of maternal healthcare services and modern family planning methods revealed that

respondents who used any of the maternal healthcare services were more likely to use modern contraceptive methods after delivery. However, the minor users were the respondents who have yet to receive the three components of maternal health care services: ANC, delivery care, and PNC. The findings also showed that respondents who received the three components of maternal health care services were 1.36 times more likely to use modern methods of contraception after delivery than those who did not use any maternal health care services.

Using maternal and child healthcare services and modern contraceptive usage in the subsequent months after delivery was assessed in India. The findings showed that the likelihood of respondents who attended ANC more than two times to use modern contraceptive methods is higher than that of women who had fewer ANC visits. The results also showed that postnatal care visits did not significantly increase modern contraceptive use compared to ANC visits. The results showed high home delivery (58%) and low postnatal care attendance (60%). This practice might have contributed to low modern contraceptive use (Dixit et al., 2017).

In Africa, a study by Do and Hotchkiss (2013) examined the relationship between maternal healthcare services and modern postpartum contraceptives in Kenya and Zambia. The findings from Kenya showed that 93% of respondents attended and received ANC. However, of the number that obtained ANC services, only 48.8% of these women attended and received PNC after delivery, and 46% adopted a modern method of contraceptives. The finding further showed that respondents with more ANC and PNC visits were more likely to adopt modern contraceptives earlier and use them compared to

those with fewer ANC and PNC visits. Findings from Zambia showed that 97.5% of respondents used ANC services during the survey period. Meanwhile, only 51.1% of these respondents received PNC services, and 45.9% adopted modern contraception within the observation period. The results from both Kenya and Zambia showed associations between the service intensity of ANC and/or PNC visits and postpartum modern contraceptive use (Do & Hotchkiss, 2013).

Machira and Palamuleni (2017) researched healthcare factors that influence teen mothers' use of contraceptives in Malawi. A regression model was used to assess the correlates of contraceptive usage before asking the respondents about their use after their first pregnancies. Due to their non-use of contraceptives, the survey indicated that 54.8% of respondents were still at risk of having a second adolescent pregnancy. This result suggests that roughly 45% of respondents took birth control after giving birth. The findings also showed that characteristics related to health, like antenatal care usage frequency, knowledge of pregnancy complications, educational level, and media exposure, predicted the use of modern contraception. Contrary to other studies, the increased number of antenatal care visits by more than four times did not reflect the use of modern contraceptives in Malawi.

The provision of postpartum family planning (PPFP) counselling sessions is an opportunity to make plans to return to a healthcare facility for postnatal care, immunisation, and receiving modern contraceptive methods. In 2017, data from 10 districts in Rwanda showed that 24% of postpartum women adopted a method of contraceptives pre-discharge from the hospital, and 67% of respondents intended to use postpartum contraception (HIP, 2017).

Similarly, a study in Ethiopia by Dona et al. (2018) found that respondents who attended and received antenatal and postnatal care were more likely to initiate the use of modern contraceptives on time after delivery compared to those who never attended and received antenatal and/or postnatal care. Zimmerman et al. (2019) also revealed low postpartum family planning counselling. Of the 83.6% of respondents who attended and received ANC services, about 50% went through postpartum family planning counselling, and 63.5% were respondents who attended and received PNC services on the seventh day, sixth week, and sixth months. The findings also revealed a higher likelihood of modern contraceptive utilisation among respondents who received counselling at ANC and PNC than those who did not.

In Senegal, research was conducted to ascertain the connection between family planning counselling offered during delivery, child immunisation appointments, and the use of postpartum contraception. The findings showed a higher likelihood of modern contraceptive usage among mothers who received education on postpartum contraception at the time of delivery than those who delivered at the hospital but did not receive education on postpartum contraception. Meanwhile, no significant relationship existed between obtaining family planning counselling at immunisation visits and modern contraceptives (Speizer et al., 2013). Another study was carried out in Nigeria to determine the impact of several family planning counselling sessions during the antenatal visit on the use of contemporary contraceptives. According to the study, participants who had numerous family planning counselling sessions throughout their prenatal appointments were more likely to take modern postpartum contraception by six weeks after giving birth than

those who only received one session during a PNC visit (Adanikin et al., 2013). The findings mean that multiple family planning counselling sessions received during antenatal care visits may improve the use of modern postpartum contraceptives.

In Ghana, a study was carried out in the Eastern Region to identify which factors influence modern family planning method usage after delivery among postpartum women attending child welfare clinics. The findings indicated that almost all the respondents attended ANC during their last pregnancies, with most respondents (86.4%) having four or more visits. Of the respondents who attended ANC, 71.4 percent received family planning counselling, and 30.1% chose a modern contraceptive method after the counselling session. Again, 93.3% of respondents attended and received postnatal care, and more than 75% had family planning counselling sessions. The findings further revealed that postnatal family planning counselling on contraception and the method of birth control chosen during ANC were significantly associated with current postpartum contraception ($p<.001$). Meanwhile, the findings showed that family planning counselling sessions did not promote increased usage of modern postpartum contraception (Adofo, 2014). The finding implies that ANC and PNC services, such as family planning counselling alone, would not influence postpartum contraceptive usage. The authors needed to investigate other possible factors instead of limiting the study to using ANC and PNC services.

Further, a cross-sectional study was conducted in Ghana using respondents attending child welfare clinics within two years of delivery. The study's findings revealed that 50.2% of the participants were using

contraceptives at the time of the study: 30.7% were using modern contraceptives, and 19.5% were using traditional methods. Again, counselling on family planning provided during prenatal care and at child welfare clinics influenced respondents' intention to use contraceptives in the future (Wuni et al., 2017). The results imply that postpartum women receiving comprehensive counselling on family planning during prenatal care and at child welfare clinics are likely to use contraceptives after delivery. However, the authors should have considered respondents in the immediate postpartum period since most women start menstruating six weeks after delivery, making them vulnerable to an unplanned pregnancy.

Morhe et al. (2017) evaluated postpartum contraception choices among postpartum mothers attending a child welfare clinic and using Komfo Anokye Teaching Hospital in Kumasi. The results portrayed that only 23.5% of respondents received family planning counselling at the prenatal clinic, and 55% of these respondents adopted a method of modern contraceptives. The study concluded that most prenatal care respondents were not receiving family planning counselling. The finding implies the need to provide comprehensive family planning educational interventions during antenatal care, delivery care, postnatal care, and well-baby clinic visits to improve the uptake of modern contraceptives. Further, an investigation to assess ANC and PNC visits on modern contraceptive use at Tema general hospital and Tema polyclinic in the Greater Accra Region showed that 97.5% of the mothers attended and received ANC services during their last pregnancies, with 74% receiving family planning counselling. Respondents who received contraception counselling during ANC visits had a higher likelihood of modern

contraceptive utilisation than those who did not receive contraception counselling during ANC visits. The findings also revealed that out of 99.7% of respondents who received PNC services, 62.7% still needed counselling or education on family planning (Coomson & Manu, 2019). The finding implies that instituting effective and continuous family planning counselling at ANC and PNC would probably increase modern contraceptive use after delivery.

Geographical location of postpartum mothers and modern contraceptives use

The geographic location of women in their reproductive age (urban and rural) has a substantial impact on their inclination to utilise contraceptives (Seran et al., 2020). Several research studies have been carried out in Europe and America focusing on contraception in rural and urban areas. As an illustration, Geske et al. (2016) conducted a study to examine the utilisation of modern contraception among adolescent women residing in rural and urban areas of Midwestern Public University in America. The findings indicated that individuals residing in rural areas had a greater number of obstacles while attempting to obtain modern contraceptive methods compared to those living in urban areas. Nevertheless, there were no disparities observed in the utilisation of modern contraceptive methods among the participants. A study of similar nature was carried out in California to investigate the awareness and utilisation of family planning services among adolescent females in both rural and urban programme locations. The results indicated that 61% of participants were cognizant of the nearby teenage family planning resource centre, whereas 24% had availed themselves of its services. According to Yarger et al. (2017), rural participants exhibited lower levels of awareness and utilisation of

family planning services compared to their urban counterparts. Specifically, 27% of urban participants reported using these services, while only 18% of rural participants did the same.

Starr et al. (2015) did a study to investigate the disparities between rural and urban areas in the use of modern postpartum contraception. They utilised data from the 2004-2008 Michigan Pregnancy Risk Assessment Monitoring System survey. The results indicated that there were no notable disparities in the utilisation of modern postpartum contraception or the geographic distribution of participants. Once again, the utilisation of efficient postpartum contraception was poor, with a rate of 21.1% observed in both rural and urban regions. Wang and Mallick (2019) did a study to examine the relationship between women's contraceptive use and their choices of contraception methods at healthcare institutions in Haiti. The study's findings indicated that the total percentage of modern contraception usage was 30% in both urban and rural areas. The results also indicated that the use of modern contraceptives by the participants is contingent upon the presence of three or more modern contraceptive options at local establishments and geographical regions, with 31% in urban areas and 35% in rural areas. The discovery suggests that women may be less inclined to utilise modern contraception methods due to the inconvenience of vast distances.

Islam et al. (2020) did a study to examine the geographical differences in the utilisation of contraception among married women. The study revealed that the rate of contraceptive usage was 67%. It was observed that those residing in urban regions (70%) had a higher prevalence of contraceptive use compared to those living in rural areas (66%). Similarly, a study conducted in

Indonesia aimed to evaluate the usage of contraceptives in urban regions. The findings revealed that the biggest proportion (63.4%) of contraceptive users resided in urban areas (Seran et al., 2020). Rural areas were not taken into account by the writers of these studies. An examination of both rural and urban areas could yield a more precise estimation of the prevalence rate of modern contraception usage in these two settings.

In addition, a cross-sectional study was carried out in the Bukombe district to evaluate the parameters linked to the utilisation of modern contraceptives. The study revealed disparities in the utilisation of modern contraception methods among urban and rural residents. Urban-dwelling women had a higher propensity to utilise modern contraceptive methods compared to their rural counterparts (Mahande et al., 2020).

Lasong et al. (2020) identified the parameters linked to the utilisation of modern contraception among women living in rural areas. The authors based their analysis on the Zambian DHS data collected between 2013 and 2014. The investigation revealed that individuals in rural Zambia (24%) have a higher prevalence of unmet demand for modern contraception compared to their urban counterparts (17%). This discovery suggests that the proportion of respondents who are expected to utilise modern contraceptive techniques but are not doing so is greater among women residing in rural areas compared to those living in urban areas. Once more, a study conducted an analysis of patterns and influential elements that contribute to the shifts in modern utilisation of contraception among married women in Ethiopia. The results revealed a progressive rise in the utilisation of modern contraceptive methods among the participants throughout the course of the study, with rates of 6% in

2000, 16% in 2005, and 36% in 2011. The results also indicated that the usage of modern contraceptives among rural respondents increased from 9.5% in 2000-2005 to 16.9% in 2005-2011, while urban settlers had a rate of 16.4% in 2000-2005 and 15.3% in 2005-2011. During the study period, the utilisation rate of modern contraceptives was 31.7% in urban areas and 26.4% in rural regions (Worku et al., 2015). An analogous study was conducted to examine urban patterns of contraceptive utilisation, availability of contraception methods, and fertility rates. The study revealed that urban regions exhibit a greater prevalence of modern contraceptive usage (38%) compared to rural areas, albeit with a marginal disparity (31.4%). Urban areas exhibited a lower fertility rate of 3.1, while rural areas displayed higher rates of 4.4 (Ross, 2021).

An assessment was conducted to examine the influence of mass media on the use of contraceptives among rural female teenagers in Nigeria. The results indicated that those utilising modern contraceptives were predominantly located in the South-South region of Nigeria, accounting for 12% of the respondents. Conversely, the Northwest part of the country had the smallest proportion, with fewer than 1% utilising modern contraceptives. The respondents' utilisation of modern contraceptives was generally poor, with a rate of 34% (Chima & Alawode, 2019). The authors might have utilised data from the 2013, 2015, and 2017 NDHS to enable readers to comprehend the pattern of modern contraception utilisation. Incorporating boys into the survey, rather than exclusively focusing on females, would have provided a more comprehensive understanding of family planning methods among young people. A separate investigation examining characteristics linked to

contraceptive usage in 17 sub-Saharan African nations revealed that those living in urban regions (22%) had a higher prevalence of contraceptive use compared to those live in rural areas (14%). In addition, the overall use of family planning methods was 17% according to Ba et al. (2019).

An investigation was conducted in Ghana to examine patterns and determinants of modern contraceptive methods, utilising data obtained from Ghana demographic health surveys conducted in 2003, 2008, and 2014. The study revealed that there was a low prevalence (25%) of modern contraception usage among both rural and urban respondents during the study period. The findings indicated that in 2003, 2008, and 2014, rural inhabitants comprised 67%, 64%, and 56% of the use of modern contraception, correspondingly (Aviisah et al., 2018). The data suggests that the prevalence of modern contraception usage during the study period was greater in rural areas compared to urban areas. Concurrently, there was a progressive decline in the utilisation of modern contraceptive methods.

Socio-demographic factors and modern contraceptives use

Research has indicated that different demographic characteristics can be used to predict the utilisation of contraception among new mothers. The determinants encompass age, religion, marital status, parity, educational attainment, employment position, number of living children, desire for additional children, and sex preference.

Maternal age and modern contraceptive use

Several studies have examined the correlation between maternal age and the utilisation of modern contraceptive methods. Ahinkorah et al. (2021) conducted a study in sub-Saharan Africa to determine the factors associated

with the use of modern contraception among women who do not intend to have children. The analysis of data from demographic and health surveys conducted in sub-Saharan Africa (specifically in the regions of West, East, Central, and South) revealed that the prevalence of modern contraceptive use was 29.6%. The utilisation of contraceptives was highest among women between the ages of 25 and 29, in comparison to those aged 45 to 49. In Uganda, Sserwanja et al. (2021) conducted a study to identify the parameters that are linked to the utilisation of modern contraceptives. The results showed that individuals who had their first child at the age of 15 were twice as likely to use modern contraception (AOR= 2.01; 95% CI: 1.01–3.99) compared to older women who had their first child after the age of 15 (AOR=1.19; 95% CI: 0.74–1.90). The data suggested that younger mothers were more likely to utilise modern contraceptive techniques after giving birth compared to older mothers.

Jalang'o et al. (2017) conducted a cross-sectional study to examine the factors that affect the use of contraceptives among postpartum mothers in rural Kenya. The study included postpartum women who were getting healthcare services at the maternity and child health clinics. The results indicated that a significant proportion (85.7%) of the women who had recently given birth and were taking contraceptives were under the age of 30 and more likely to be married ($p < 0.01$) compared to those who were not using any form of contraception. A study was carried out in Nigeria to evaluate the timing of women's initiation of modern contraception and the factors that influence its usage. Utilising performance monitoring data from 2017 and accountability data from 2020, the study discovered that the prevalence of modern

contraception usage among participants was 14.2%. The highest proportion of individuals (44.4%) taking modern contraceptives was discovered among respondents aged 35-39 years. With a proportion of 40.8%, the 30-34 age group came in second. The lowest proportion, recorded at 7.8%, was observed among individuals aged 45-49 years. The study conducted by Ekholuenetale et al. (2021) revealed a strong correlation between the age of mothers and the utilisation of modern contraceptives, with a *p*-value of 0.001.

Nyarko (2015) conducted a study on the utilisation of contraceptives among adolescent females in Ghana. The study revealed that the overall rate of contraceptive use among participants was 18.3%, with 14.6% utilising modern contraceptive methods and 3.7% relying on traditional methods. The majority of respondents (59%) were between the ages of 18 and 19, while the remaining 41% were aged 15 to 17. The prevalence of contraceptive use was greater among respondents aged 18 to 19 (31.4%) compared to those aged 15 to 17 (9.2%). Beson et al. (2018) conducted a study at Lekma Hospital to evaluate the utilisation of modern contraceptives and the determinants affecting their usage among women of reproductive age. The data revealed that 25% of individuals between the ages of 30 and 39 were utilising modern methods of contraception. This was closely followed by the age range of 20 to 29, with a usage rate of 23%. In contrast, only 1% of respondents aged 40 to 49 reported using modern contraceptives. During the study period, none of the participants in the adolescent group utilised modern contraceptive methods. The overall prevalence of modern contraception usage was 21%.

Religion and modern contraceptive use

According to the Ahinkorah et al. (2021) study conducted in sub-Saharan Africa, the use of modern contraceptives exhibits variation depending on individuals' religious affiliations. The study results indicated that individuals with no religious connection (OR= 0.81), traditionalists (OR= 0.78), and Muslims (OR= 0.60) had lower rates of contraceptive use compared to Christians.

A study examining the factors that affect the utilisation of contraceptives among postpartum women attending maternity and child health clinics in rural Kenya discovered a correlation between the religious beliefs of the participants and their adoption of family planning methods following childbirth ($p< 0.01$). The study findings indicated that those associated with the Seventh Day Adventist Church (SDA) were more likely to embrace and utilise family planning methods compared to individuals belonging to other religious groups (Jalang'o et al., 2017). These findings may indicate the potential for churches to provide instruction on modern contraception and its advantages to their congregations.

In Nigeria, Ujah et al. (2017) conducted a cross-sectional study at Jos University Teaching Hospital to assess the inclination of women to utilise postpartum family planning strategies. The survey revealed that 64% (n= 262) of the women expressed their intention to utilise postpartum contraceptives, whereas 24% (n= 95) said that they had no intention of employing any form of postpartum contraception. Meanwhile, 12% (n= 48) of the participants expressed uncertainty regarding the utilisation of postpartum contraception. Additional research revealed that 2.1% of the participants who chose not to

use postpartum contraception cited religious views as the reason for their decision. In Nigeria, Ekholuenetale et al. (2021) did a study to evaluate the timing at which women of reproductive age begin using contraception after giving birth, as well as the factors that influence its utilisation. The results revealed a low prevalence of modern contraception usage among the participants, with only 14% reporting its use. According to religious beliefs, 41% of respondents belonging to Christian denominations reported using modern contraceptives at the time of the study, which was higher than any other religious group. In contrast, just 20% of respondents practising Islam reported using contraceptives, making them the religious group with the lowest usage. The results additionally demonstrated a correlation between the use of modern contraceptives and religious associations (P <.001).

Beson et al. conducted a study in Ghana to evaluate the usage of modern contraceptives among women in the Ledzokuku Krowor municipality. The findings indicated that the general occurrence of modern contraceptive utilisation was 21%, and the respondents' religious convictions had an impact on the adoption of these techniques. Women who followed religious teachings were significantly less inclined to use modern contraceptives (OR= 0.4) compared to those who did not adhere to religious teachings when making decisions about modern contraception (Beson et al., 2018). A separate study examined the correlation between socio-demographic factors and the present utilisation of modern contraceptives among women in Ghana. The study utilised data from the 2008 Ghana Demographic Health Survey (GDHS). The data indicate that women who identify with the Muslim faith have a lower likelihood of using contraceptives due to their beliefs towards procreation, in

comparison to women who adhere to other religious beliefs. According to Adjei et al. (2014), this discovery suggests that religious affiliation may have an impact on the use of contraception at present.

Educational level and modern contraceptive use

An investigation was conducted in Indonesia to examine the factors linked to the use of contraceptives among women. The data from the Indonesian demographic and health survey (IDHS) 2017 was analysed to determine the educational level of the respondents. Approximately 55% of the participants possessed a secondary level of education, whereas 29% had a primary level, 14% had a post secondary degree, and 2% had no formal education. The findings indicated that the overall prevalence of contraceptive use was 56%. The majority of users (48%) had a secondary education, followed by respondents with a primary education level (41%), respondents with a tertiary education level (10%), and a negligible percentage (1% of users) had no formal education (Antarini, 2021).

Similarly, a study was conducted in Bangladesh to evaluate the use of contraception and the factors that influence its use among women who are employed and jobless. The results indicated that employed women had a greater level of education, with 68% having attained a higher educational level. In contrast, among unemployed women, the percentage with a higher educational level was recorded at 65.3%. The probability of those with higher levels of education taking modern contraception was greater compared to those without any formal education [OR (95% CI): 1.646 (0.966–2.802)]. According to Islam et al. (2016), the study revealed that 56.5% of employed

respondents and 51.7% of unemployed respondents reported using modern contraceptive methods.

Ahinkorah et al. (2021) did a study in sub-Saharan Africa to determine the parameters linked to the utilisation of modern contraception among women who had no desire to conceive. Analysed were data from 29 sub-Saharan African states, namely from demographic and health surveys. The results indicate that the level of education of the respondents positively influenced their probability of utilising modern contraceptive methods. Respondents with higher educational levels had a significantly increased likelihood (adjusted odds ratio [AOR] = 1.93, 95% confidence interval [CI] = 1.75–2.13) compared to those with no formal education.

Rutaremwa et al. (2015) conducted a study in Uganda to identify the factors that influence the use of modern contraceptives by women of reproductive age after giving birth. According to the results, 61% of the participants in the survey had completed basic education, 24% had completed secondary education, and 15% had not received any formal education. The study also indicated that the rate of postpartum modern contraception use was 28%. Out of the participants who utilised modern contraception methods following childbirth, 42% had completed secondary education. By contrast, those lacking formal education were discovered to have a low use rate of modern contraception following childbirth (12%). Individuals who had finished elementary or higher education were more inclined to utilise modern contraceptive techniques after giving birth compared to those who had no formal education. The odds ratio (OR) for this association was 1.96, with a 95% confidence interval (CI) ranging from 1.429 to 2.682. Similarly, the OR for

individuals with primary or higher education was 2.73, with a 95% CI ranging from 1.87 to 3.968. A significant correlation was seen between the educational attainment of participants and the utilisation of modern contraception following childbirth (p= 0.000).

In Malawi, Mandiwa et al. (2018) conducted a study aimed at identifying the risk variables associated with contraceptive use among young women. The results indicated that among all the participants, 4.4% (n = 455) had not received any formal education, 64.7% (n = 6739) had completed primary school, and 31% (n = 3227) had additionally completed secondary school or higher education. The prevalence of contraceptive use was 30.9% among respondents with different levels of education: 4.9% for those with non-formal education, 69.4% for those with elementary education, and 25.8% for those with secondary or higher education. The findings also demonstrated a statistically significant correlation between education and the use of contraception (p= 0.001). The probability of individuals who have completed elementary school and secondary or higher education using contraceptives was greater than that of individuals with no formal education (Adjusted Odds Ratio = 1.47, 95% Confidence Interval = 1.18-1.83, p-value = .001; Adjusted Odds Ratio = 1.24, 95% Confidence Interval = 0.97-1.57, p-value = .083 correspondingly). In a study by Semacheew Kasa et al. (2018), the researchers looked at how women in the South Achefer district of Northwest Ethiopia used modern contraceptive methods. The results indicated that 47% (n= 179) of participants lacked formal education, while 52% (n= 199) had completed basic education, and only 1% (n= 3) had attained secondary education. The overall prevalence of family planning practices among respondents was 50.4%.

The majority of respondents (77%), including those with primary and secondary education, reported having good family planning practices. Respondents lacking formal education exhibited a lower utilisation rate of family planning, with only 21% reporting its use. Nevertheless, a robust and noteworthy correlation was seen between educational attainment and the adoption of family planning measures [$\chi 2$ (df =1) =119.264, P =.001].

According to a study by Beson et al. (2018) at Lekma Hospital in Ghana, 31% of the participants had completed junior high school (JHS), while 24% had completed both senior high school (SHS) and post secondary education. Additionally, 13% of the respondents had primary education, while 8% had no formal education. The results also revealed that the overall prevalence of modern contraceptive use among the participants was 21%. Individuals with junior high school education had the highest usage rate at 26%, while those without formal education had the lowest rate at 1%. A study conducted in Ghana found that women with university, secondary, and primary education were more likely to use modern contraceptives compared to women without any formal education (Aviisah et al., 2018). Teye (2013) conducted a study that also discovered a correlation between the educational level of respondents and their utilisation of modern contraceptives.

Marital status and modern contraceptive use

In Kenya, Moon et al. (2021) conducted a cross-sectional study to ascertain the factors that impact contraceptive utilisation and the occurrence of unplanned births among women in their reproductive years. An analysis of data collected from six sub-locations in Migori between 2018 and 2019 showed that 89% (n= 3,222) of the participants were in a marital or cohabiting

relationship, 7% (n= 257) were previously married, and 4% (n= 162) were single. Furthermore, the findings indicated that the prevalence of contraceptive use was 63%. Among the women who used contraceptives, the highest proportion (65%) were in a marital or cohabiting relationship, followed by those who were previously married (51%) and single (46%). Married or cohabiting women were found to have a twofold higher likelihood of using modern family planning methods compared to single women (OR: 1.932, 95% CI: 1.387–2.690, p <0.001).

A separate study was carried out to evaluate the level of awareness and perspective of women towards techniques of family planning in the South Achefer district. The findings indicated that 62% of married women exhibited positive family behaviours, but only 28% of single women demonstrated the same. The results also indicated a correlation between married status and the use of contraception ($\chi 2$= 39.050, df= 1, P< 0.001). The findings suggested that married women had a higher propensity to use family planning approaches compared to unmarried women. Married women may engage in increased use or implementation of family planning methods in order to avoid unintended pregnancies (Semacheew Kasa et al., 2018). In the same vein, a study conducted in Uganda examined the variables influencing the use of modern contraception among women during the postpartum phase. The findings indicated that 28% of the women were employing modern contraceptive methods following childbirth. Of the women who used modern contraception, 33% were unmarried, 28% were married, and 21% were previously married (divorced or separated). Nevertheless, there was no noteworthy correlation observed between marital status and the use of modern

contraception following childbirth (p= 0.206). The data suggest that the decision to use or not use modern contraception after birth is not influenced by marital status (Rutaremwa et al., 2015).

A study examining the factors linked to contraceptive usage in 17 sub-Saharan African countries, based on data from the Demographic Health Survey, revealed that the prevalence of contraception was highest among individuals who were married or cohabiting (18%), while single women had the lowest prevalence (14%). The results also indicated that individuals who were not currently married and had been married before were 37% and 23% more inclined to utilise modern contraceptive methods compared to those who were now married (Ba et al., 2019). Olagunju et al. (2020) did a study in five West African nations to investigate the level of knowledge and factors that affect the usage of modern contraceptives among young women. The findings indicated that the collective utilisation of contraception among participants in the five nations was 17% in Burkina Faso, 21% in Cote d'Ivoire, 18% in Ghana, 12% in Niger, and 9% in Nigeria. The prevalence of modern contraceptive use among cohabiting or married women in Cote d'Ivoire, Ghana, Niger, and Nigeria was shown to be higher, with rates of 30%, 55%, 25%, and 33%, respectively, compared to women who are divorced, separated, or single. With the exception of Burkina Faso, the usage of modern contraceptives among women who were separated or divorced (36%) was higher compared to women who were living together or married (32%). The findings demonstrated a noteworthy correlation between married status and the utilisation of modern contraception (p <.05).

An analogous study investigated the impact of individual and community factors on the utilisation of modern contraceptive techniques in Nigeria. The analysis utilised a dataset obtained from Nigeria's PMA 2020 survey, which was completed in 2018. The dataset consisted of 9,126 sexually active women who were in their reproductive years. The study findings indicated that married respondents and those who were divorced or widowed exhibited lower rates of modern contraception usage compared to unmarried sexually active women (Alo et al., 2020). A study conducted in Ghana found that marital status is the primary determinant of modern contraception utilisation for both men and women (Nketiah-Amponsah et al., 2022). The discovery aligned with the research conducted by Boadu (2022), which indicated a significant probability of married women utilising modern contraceptive methods. In contrast, a study conducted by Aviisa et al. (2018) found that married women were less likely to use modern contraception compared to women who were cohabiting with their partners.

Parity and modern contraceptive use

Ahinkorah (2020) conducted a study in 29 countries in sub-Saharan Africa to investigate the factors related to the use of modern contraceptives among women of reproductive age, focusing on both individual and environmental variables. Based on data collected by the Department of Homeland Security (DHS) between 2010 and 2018, our analysis reveals that those who had given birth four or more times had the lowest rate of utilising modern contraception, with only 14.7% reporting its use. The prevalence of modern contraceptive use was highest among women who had given birth twice (27.6%), followed by women with one birth (27%) and women with no

births (22.3%). The findings suggest that respondents who had many children were not utilising modern contraceptive methods to avoid unintended births.

Hounton et al. (2015) conducted a survey in three countries to analyse the patterns and trends in the utilisation of postpartum family planning. The researchers utilised data obtained from the demographic and health surveys carried out in Malawi, Nigeria, and Ethiopia. The findings revealed significant variations in the rates of modern postpartum contraception utilisation among the three countries. Though parity levels are present, the utilisation of modern postpartum contraceptive options is limited in Nigeria. The results also indicated that there was no statistically significant distinction between modern postpartum contraception usage and parity in Malawi. In Ethiopia, there was observed diversity in the utilisation of modern postpartum contraception, with those with lower parity exhibiting a higher frequency of employing these methods. Conversely, the utilisation of modern postpartum contraception among participants who had given birth to four or more children decreased by 50%.

The study conducted by Alo et al. (2020) investigates the impact of individual and community-level factors on the utilisation of modern contraceptive techniques in Nigeria. The study utilised data from Nigeria's PMA2020 survey conducted in 2018, which involved 9,126 sexually active women between the ages of 15 and 49 who were capable of reproduction. The results indicated that those with 3-4 and 5 or more children were more inclined to utilise modern contraceptive techniques after giving birth compared to those with no children (adjusted odds ratio [AOR]: 1.9, 95% confidence interval [C.I.]: 1.32–2.80; AOR: 2.3, 95% C.I.: 1.41–3.70), respectively.

Eliason et al. (2018) conducted a study in Ghana to evaluate postpartum fertility and the adoption of contraceptive practices among 1,350 women in the Mfantseman municipality, one year after giving birth. The results demonstrated a notable correlation between the quantity of participants and the utilisation of contraception following childbirth. This discovery indicates that the number of children a person has was a determining factor in their usage of contraception after giving birth. The results also indicated that women with higher parity were 1.9 times more likely to use modern contraception after giving birth (odds ratio = 1.90, 95% confidence interval = 1.71-2.10, p = 0.001). The discovery suggested that women with a greater number of children tend to use contraception more frequently than those with fewer children. A separate study was carried out in Ghana to analyse the patterns and determinants of contraceptive utilisation among adolescent females. The study revealed that individuals with a greater parity had a modern contraceptive usage rate of 50%, but those with a second parity had a rate of 22.2%. The findings suggested a positive correlation between the number of childbirths and the utilisation of current contraceptive techniques, which have a higher efficacy in avoiding unintended pregnancies (Appiah et al., 2020).

Working status and modern contraceptive use

Islam et al. (2016) conducted a study on the factors that influence the utilisation of contraceptives among employed and unemployed women in Bangladesh. Based on the findings, employed individuals (67%) exhibited a higher frequency of contraceptive use compared to unemployed ones (61%). Once again, the findings indicated that individuals who indicated employment

were 1.21 times more inclined to use contraception compared to those who did not have a job.

A study was done to ascertain the correlation between individual and environmental characteristics and the utilisation of modern contraceptives among women of reproductive age in sub-Saharan Africa. Analysis of DHS data from 29 nations indicated that 26.2% of respondents who used modern contraception were unemployed, whereas 23.6% were employed. The findings suggest that women who were not employed had a higher prevalence of modern contraceptive procedures compared to those who were employed (Ahinkorah, 2020).

A separate study examined the significant contextual factors that influence the utilisation of modern contraceptive techniques in Nigeria, encompassing a sample of 12,186 married women. The results revealed that 73% (n= 8,937) of the participants were in employment, while 27% (n= 3,249) were without a job. The use of modern contraceptives was less prevalent among unemployed women in comparison to working women, with an odds ratio of 0.78 and a 95% confidence interval ranging from 0.60 to 1.03. The survey revealed that the utilisation of modern contraceptives was low among employed respondents, with a rate of 22.4%, and among jobless respondents, with a rate of 9.2% (Ononokpono et al., 2020). The results indicate that the utilisation of modern contraception among all participants was subpar, with a user rate of less than 50%.

Men and women from each of the three sub-metropolises of Tamale in Ghana were involved in an investigation to determine the factors that affect the utilisation of contraceptive methods. The findings indicated that 20.6%

(n=98), 21.5% (n=102), 35.8% (n=107), and 22.1% (n=105) of the participants were students. Furthermore, a significant link was seen between the employment level of the respondents and their use of contraceptives (p=0.001).The findings also indicated that the total prevalence of contraceptive use was 36.8%. According to Abdulai et al. (2020), students and self-employed individuals were more inclined to use contraception compared to formally employed individuals. The odds ratio (OR) for students was 1.5 with a 95% confidence interval (CI) of 0.8–2.6, while the OR for self-employed individuals was 1.2 with a 95% CI of 0.7–2.1.

Number of live children and modern contraceptive use

A cross-sectional study was done to ascertain the parameters linked to the utilisation or non-utilisation of contraceptives among 369 reproductive women who visited primary health clinics in the Aljouf region of Saudi Arabia. The findings indicated that 3.5% (n=13) of the respondents did not have any children, 51.8% (n=191) had between 1 and 3 children, and 44.7% (n=165) had four or more children. The findings also indicated that individuals who had at least one child were more inclined to use contraceptives compared to those who did not have any children. The survey found that 77.2% of women were using contraception. Furthermore, a significant correlation was observed between the number of children and the contraceptive use of the respondents (p= 0.003). The number of children a woman has affects her choice of contraception (Abdel-Salam et al., 2020). Owuor et al. (2018) conducted a cross-sectional study at a facility to identify the factors that affect the adoption of postpartum family planning strategies. The study encompassed a total of 259 women who had recently given birth and took their children to the child

welfare clinic for the initial measles vaccination at Webuye County Hospital, located in western Kenya. Univariate logistic regression was employed to examine the acquired data in order to determine the parameters that could predict the utilisation of postpartum contraception. The findings revealed that 78.4% of the respondents had adopted postpartum contraception. The results also indicated a correlation between the number of offspring and the use of contraceptive measures following childbirth. Individuals who have a smaller number of live children are more inclined to use contraceptives compared to those who have none (odds ratio = 1.351, 95% confidence interval = 1.071–1.705, *p*-value = 0.011). The discovery suggests that the presence of several children could potentially influence individuals to use contraceptive techniques.

Rutaremwa et al. (2015) conducted a cross-sectional study in Uganda to examine the factors influencing pregnant women's decision-making about the acceptance and use of modern postpartum contraception. The 2011 UDHS utilised secondary data that focused on mothers who had given birth within the five years before the survey. The results demonstrated a statistically significant correlation between the number of children who are alive and the use of contraception after childbirth (*p*= 0.002). Regarding postpartum contraception, the findings indicated a substantial utilisation rate: 30.6% among participants with 1-2 children, 28.3% among those with 3-5 children, and 23% among those with six or more children. The results also indicated that individuals who have children were more inclined to use postpartum contraception (odds ratio = 1.090, 95% confidence interval = 1.026-1.158).

A further study done in East Africa aimed to identify the parameters linked to contraceptive utilisation among women over the extended postpartum phase in Tanzania. The results indicated that 45.6% of the respondents had 1-2 living children, 29.2% had 3-4 live children, and 25.2% had five or more live children. The prevalence of contraceptive use among postpartum women was 11.9% (n= 61). The study also found that postpartum women with three or more live children had lower rates of modern contraception usage after childbirth compared to women with one or two live children. This finding suggests that women who have given birth to three or more children were either not using or did not plan to use contraceptives after giving birth. It is reasonable to assume that women who have multiple living children would employ efficient contraception methods to avoid unintended pregnancies (Mahande et al., 2020).

An inquiry was conducted in Ghana to examine the parameters linked to the utilisation of modern contraceptives among female vendors in the market. The study revealed that 36.9% of the respondents used modern contraceptive techniques. The survey found that 60% of respondents (n=174) had between 1 and 4 live children, while 40% (n=116) had more than four living children. Among those with 1-4 living children, 38.5% reported using modern contraception, whereas for those with more than four living children, the percentage was 34.5%. The results also indicated a lack of correlation between the number of offspring and the utilisation of modern contraception methods (p= 0.49). The results suggested that there is no correlation between the number of children a person has and their utilisation of modern contraceptive methods (Asiedu et al., 2020).

Eliason et al. (2014) conducted a study in Ghana to investigate the determinants of modern contraception utilisation among women in the Nkwanta district. The study found that respondents who preferred to have less than four children were more likely to use modern contraception compared to those who did not wish to have less than four children (OR = 1.19, 95% CI = 0.72-1.97).

Desire for more children and modern contraceptive use

A study was done to evaluate the impact of several individual and environmental factors on the utilisation of modern contraception among women of reproductive age in sub-Saharan Africa. The results indicated that 32% of the participants opted for modern contraceptives due to their preference for not having any additional children, in contrast to those who intended to have more children (24.4%). The prevalence rate of modern contraceptive methods among participants in 29 countries was 24.7% (Ahinkorah, 2020). The findings suggest that women who express a desire for additional children have a lower prevalence of using modern contraceptive methods.

A cross-sectional study was undertaken to assess the utilisation of long-acting reversible contraceptives (LARCs) among women over the extended postpartum period in the Mityana district, a rural area of Uganda. The results indicated that 75% (n= 300) of participants expressed a readiness to utilise all methods of family planning. Nevertheless, a significant majority (77%) of participants indicated a strong inclination towards having additional offspring. Furthermore, over half of these individuals (53%) were born during the initial six months following childbirth. Individuals who expressed a wish to have

more children were found to have a lower likelihood of using the current type of contraception known as Long-Acting Reversible Contraceptives (LARC), compared to those who did not have such a desire (Adjusted Odds Ratio = 0.93, 95% Confidence Interval = 0.38–2.27, p = 0.87). The study revealed that there was no significant correlation between the inclination to use a modern contraceptive, the aspiration for further children, and the length of the postpartum time with the utilisation of current contraceptive techniques throughout the extended postpartum period (Anguzu et al., 2018). The research project investigates the influence of individual and community-level factors on the utilisation of modern contraceptive techniques in Nigeria. The study utilised data gathered in 2018 from women who were sexually active and of reproductive age. The study results indicated that individuals who did not intend to have further children had a 1.5 fold greater probability of utilising modern contraceptive methods compared to women who expressed a desire for more children (Alo et al., 2020). The data suggest that women who have chosen to cease childbirth are more likely to engage in modern contraceptive methods.

A cross-sectional study was carried out in Ghana to evaluate the understanding and determine the factors that affect the utilisation of contraceptive methods among 189 women of reproductive age in Asankragwa, located in the western region. The findings indicated that a greater percentage of participants, specifically 64% (n= 110), firmly expressed their disagreement with the claim that having a strong desire for multiple children hinders the use of contraceptives. The findings indicate that the respondent's inclination to have additional children would not hinder her from using contraception (Ebu

et al., 2018). Teye (2013) found that women who have a strong desire to have children are unwilling to use modern contraceptive methods.

Sex preference and modern contraceptive use

A study conducted in Nepal examined parental preferences regarding the sex of their children and how it influenced their contraceptive practices. The research was carried out in Sonapur village, encompassing a sample of 300 women of reproductive age who were in a committed partnership and had a minimum of one child. Upon analysis of the obtained data, it was shown that a significant majority (88.7%) of the respondents expressed a desire for an equal number and gender distribution of children, with at least one boy and one daughter. The sex ratio of respondents who expressed no desire for additional children was 1.41, indicating a higher percentage of girls compared to males. However, the respondents who expressed a preference for a balanced ratio were 2.17 times more likely than those who preferred a son to have a ratio of 1.375. The results also showed that individuals who were exclusively exposed to either males or females during their childhood were significantly more inclined to use permanent contraceptives compared to those who were exposed to both sexes (AOR = 2.593, CI = 0.898–7.489; AOR = 1.073, CI = 0.315–3.655), respectively. The results suggest that respondents' preference for the sex of their children does not have a detrimental effect on the utilisation of modern contraceptive methods. This implies that regardless of the gender of their children, respondents were observed to use contraceptives, either temporarily or permanently (Rai et al., 2014).

In a study conducted by Dey et al. (2021) in India, the researchers assessed the distribution of male and female offspring based on the number of

previous births and examined how this influenced the utilisation of modern contraceptives among 5,6731 couples who had at least one child. According to the data, a majority of respondents, specifically 56.8%, reported using modern contraception techniques. Respondents who had one to three children were less inclined to use modern contraception if they had an equivalent or greater number of daughters than sons, in contrast to those who had no daughters. The results also indicated that respondents with four or more children were more likely to use modern contraceptive techniques when they had at least one son and a girl, compared to those with four or more sons and no daughters. Once again, the results indicated that individuals who have four or more children, including both males and at least one daughter, are more inclined to utilise modern contraceptive methods compared to those who have just sons and no daughters. However, respondents who had four or more daughters and no sons exhibited a lower likelihood of utilising modern contraception compared to those with four or more sons and no daughters (Dey et al., 2021).

A cross-sectional study was conducted in Malawi to evaluate the correlation between gender preference, the sex composition of living children, and fertility intention among married women in a stable relationship with a minimum of five children. Upon analysing the data from the Malawian Demographic Health and Survey, it was discovered that 39.7% of the participants expressed a preference for a specific gender, with 23.3% indicating a preference for females. The results also indicated that 30.4% of participants whose children share the same sex desired to have additional children, but only 15.3% of participants with households consisting of children of different sexes expressed the same desire (Adebowale & Palamuleni, 2015).

A study conducted in Ghana focused on analysing the gender distribution of living children and its impact on the utilisation of postpartum family planning in the Mfantseman municipality. The study revealed that 28.7% of participants only had male offspring, whereas 22.4% exclusively produced female offspring. Regarding participants who had both male and female offspring, 13.8% had a higher number of daughters than sons, 15% had a higher number of sons than daughters, and 20.1% had an equal number of sons and daughters. The study revealed that respondents who had only daughters had an intention to use postpartum contraception at a rate of 77.9%, while those who had only sons had a rate of 75.4%. Respondents with more daughters than sons had the highest rate at 83.4%, while those with more sons than daughters had a rate of 78%. Finally, respondents with an equal number of both sexes had an intention to use postpartum contraception at a rate of 77.2%. There is no correlation between the gender distribution of live children and the usage of contraception after childbirth (p= 0.421). The results suggested that there is a strong inclination to use postpartum contraception among the participants, particularly among those who have more daughters than sons. The sex composition of children has no impact on the utilisation of postpartum contraception (Eliason et al., 2018).

Conceptual Framework

A conceptual framework was constructed to elucidate the factors influencing the utilisation of modern contraceptives during the immediate postpartum period and to establish the interconnections between these aspects. The development of this conceptual framework was informed by a thorough examination of existing literature and the integration of two prominent

theories on behavioural health change: the Health Belief Model (HBM) and the Knowledge, Attitudes, and Practices (KAP) model. The variable combinations of the conceptual framework were derived from the two theories. The conceptual framework consists of three main components: individual perception, modifying or enabling circumstances, and the probability of action. The graphical design places individual perceptions, such as sensitivity, severity, and barriers, on the upper left side. The upper central region encompasses influential or facilitating elements, such as enhancing knowledge, maintaining a positive mindset, receiving family planning therapy, and socio-demographic characteristics. The probability of taking action is determined by the perceived advantage and is located in the upper right corner of the graphical layout of the framework. The conceptual framework illustrates the process by which postpartum women develop a favourable mindset towards modern contraception and subsequently utilise it following the acquisition of sufficient knowledge.

Postpartum women's views, perceived susceptibility, severity, and perceived barriers may contribute to a perceived threat. When a woman becomes aware of the possibility of an unintended pregnancy, the need for an abortion, or the risk of harm to both the foetus and the mother, she will respond in ways that increase the probability of taking positive steps. Once again, a postpartum woman who has been extensively educated about modern contraception through family planning counselling throughout antenatal care, delivery, and postnatal care and holds a positive outlook would view the decision to not take modern contraceptives as a potential danger to her life. Conversely, the postpartum woman was able to recognise the advantages of

utilising modern contraception methods, hence enhancing the probability of engaging in constructive behaviour. Furthermore, prompted by the advice of medical professionals and information from various sources, including print and electronic media, regarding the risks associated with the lack of use of modern contraception among postpartum women, this situation is perceived as a potential threat that necessitates taking proactive measures for the sake of one's health.

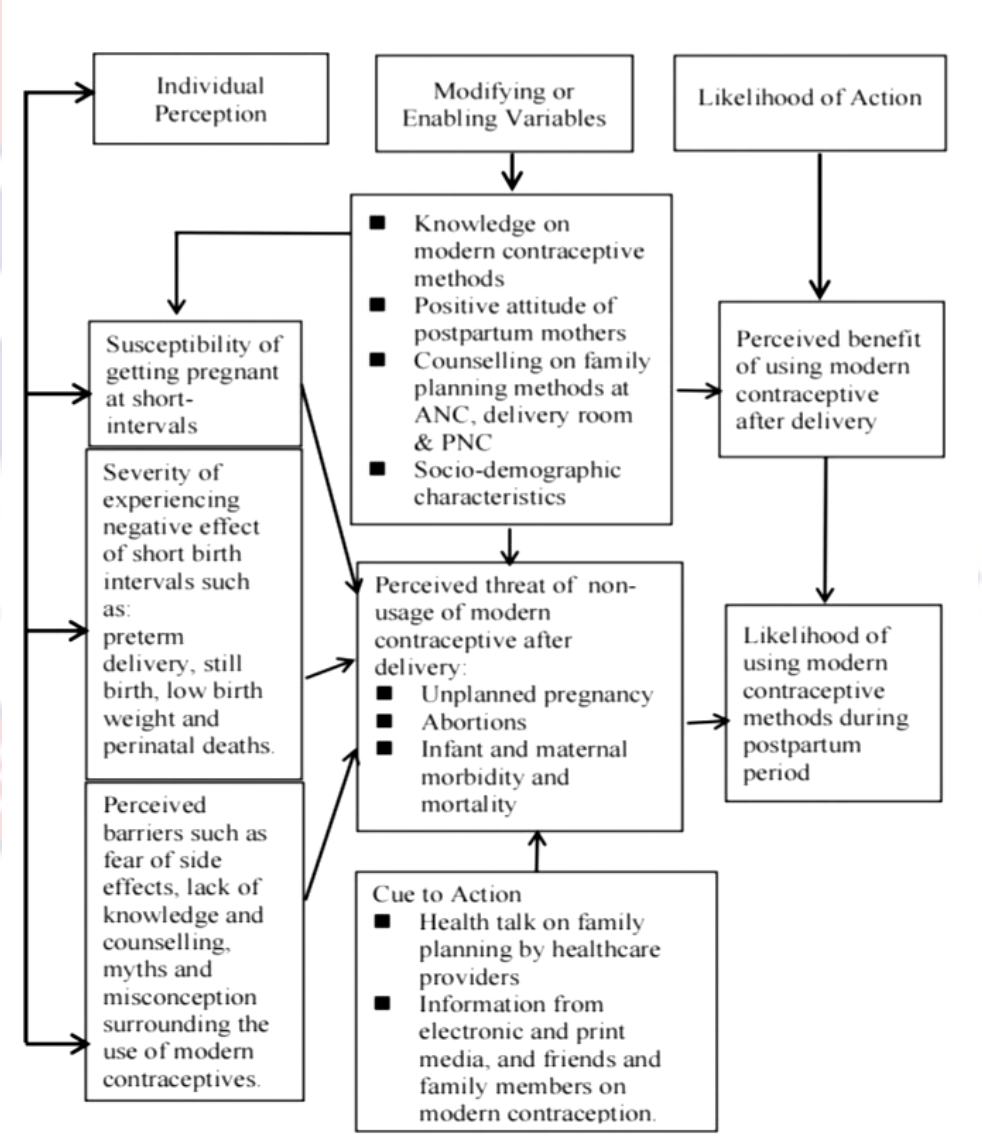

Figure 4: Conceptual framework of the study

Summary

The literature review covered the provision of maternal healthcare services, postpartum women's knowledge level of modern contraceptive methods, the attitude and geographical location of the postpartum women, and their sociocultural and demographic variables on modern contraception use. Based on the literature review, delivery of maternal and child health care and services were identified as essential variables where decisions surrounding modern contraception use during the postpartum period are taken. It was noted from the various studies' results that regular attendance at antenatal care and timing of postnatal care delivery motivate postpartum women to use modern contraceptive methods in the immediate postpartum period. Again, other studies showed that integrating all family planning services, including family planning counselling, child welfare, and immunisation services, would help these immediate postpartum women receive all the needed services at the same visit by the same competent health team. Integrating maternal and child healthcare services would contribute to and increase the use of modern contraceptive methods in the immediate postpartum period.

From the conceptual framework and the theories for the research, the individual immediate postpartum women's decisions are influenced by the level of acquisition of accurate information and knowledge on modern family planning methods, which serves as a foundation, and a positive attitude, which serves as a driving force towards practicing modern contraception. Again, among the modifying factors of the HBM, immediate postpartum women's educational level, parity, desire for many children, and sex preference also affect their decision-making process. Other factors, such as religion,

geographical location, and employment, which directly affect the financial status of postpartum women, could influence the utilisation of modern contraception. The empirical literature reviewed showed little about modern contraception in the immediate postpartum period. The focus of this study is to close this gap in the literature review.

CHAPTER THREE

RESEARCH METHODS

The study aimed to investigate modern contraceptive use among women in the immediate postpartum period in the Sunyani Municipal Area of the Bono Region of Ghana. This chapter describes the process by which the whole study was conducted. The chapter spells out the type of research design used, the study setting, the target population, the sample size, and the sampling procedures used. Other sections also describe the instrument used for data gathering, the validation and reliability of the instrument, the procedures for data collection, data analysis, and ethical considerations.

Research Design

A quantitative approach using a descriptive cross-sectional design was adopted in the study to investigate and establish the utilisation of modern contraceptives among postpartum women in the immediate postpartum period in the Sunyani Municipal area of Ghana. Research design provides the strategies to develop accurate information for answering the research questions or testing hypotheses (Loiselle et al., 2004). A descriptive cross-sectional study is non-experimental and describes or provides an in-depth account of real-life situations. However, this descriptive research design has a limitation; participants may only sometimes be factual if the questions are too personal or when they feel they are being watched (Loiselle et al., 2004).

A descriptive cross-sectional study was used because it also involved the researcher obtaining current information about participants' actions, knowledge, intentions, opinions, beliefs, preferences, and attitudes about modern contraceptive usage during the immediate postpartum period through

direct questioning (Loiselle et al., 2004). In this study, a positivist research paradigm was used, as it is associated with quantitative research and covers a wide range of situations in a short period of time. A paradigm is a particular way of viewing phenomena that consists of a set of philosophical assumptions that guide one's approach to inquiry (Grove et al., 2013). The positivist paradigm uses a systematic scientific approach, assuming that an orderly reality can be objectively studied (Loiselle et al., 2004). The positivist approach to knowledge is based on an accurate and objective interpretation of data rather than introspection or intuition. This study was as objective as possible in pursuing knowledge using a quantitative descriptive cross-sectional research design.

Study Area

The study focused on eight healthcare facilities in the Sunyani Municipal Area of the Bono Region, Ghana. These institutions include Bono Regional Hospital, Seventh Day Adventist Hospital, Sunyani Municipal Hospital, Owusu Memorial Hospital, Nsoatre Clinic, Chiraa Clinic, Kwatire Clinic, and Fiapre Health Centre.

The Sunyani Municipal Area is divided into two districts: the Sunyani East Municipality Assembly and the Sunyani West District Assembly. The Sunyani East Municipality Assembly has a total land area of 520.3 km2 and borders the Sunyani West Municipality, Dormaa East District, Asutifi South District, and Tano North Municipality. The majority of the population within the municipal territory is mostly observed in three distinct communities, namely Sunyani, Abesim, and New Dormaa. These three towns collectively account for around 83% of the total people residing in the area.

The economy of the municipal area is predominantly agrarian, with the capital city, Sunyani, playing a pivotal role as a key market hub for various agricultural commodities, including maize, cassava, plantains, yams, cocoyams, and vegetables. The region also cultivates profit crops such as oil palm, mangoes, cashew nuts, cocoa, and citrus. The majority of agricultural producers are involved in the cultivation of small ruminants, aquaculture, and poultry. Approximately 65.7% of households residing within the municipal territory are involved in non-agricultural pursuits, while the remaining 34.3% are engaged in agricultural activities.

The distribution of healthcare facilities within the urban region of the Sunyani municipal area, with almost all private health facilities located in urban areas. The Sunyani Municipal Area has six hospitals, twelve clinics, seven community-based health planning and services (CHPS) compounds, three maternity homes, and three health centres providing health services to the population. The Bono Regional Hospital and Sunyani Municipal Hospital serve as referral points to the lowest-level health facilities in the area and beyond.

The Sunyani West District Assembly was established in November 2007 and inaugurated on February 29, 2008, with the administrative capital at Odomase. The district's fertility rate grew from 3.2 in 2010 to 3.5 in 2021, with a population density of 128.2 persons per square kilometer. The general picture shows that the fertility rate has increased in the district, suggesting that women of reproductive age need to start using modern contraceptives to slow the rapid population growth.

Regarding providing health services to the people, the district has five health centres, two private clinics, seven CHPS compounds, and three maternity homes. The study selected four healthcare institutions from each assembly. Sunyani East Municipal Assembly: Bono Regional Hospital, Owusu Memorial Hospital, Sunyani Municipal Hospital, and Seventh Day Adventist (SDA) Hospital. For the Sunyani West District Assembly, Fiapre Health Centre, Nsoatre, Kwatire, and Chiraa Clinics were used.

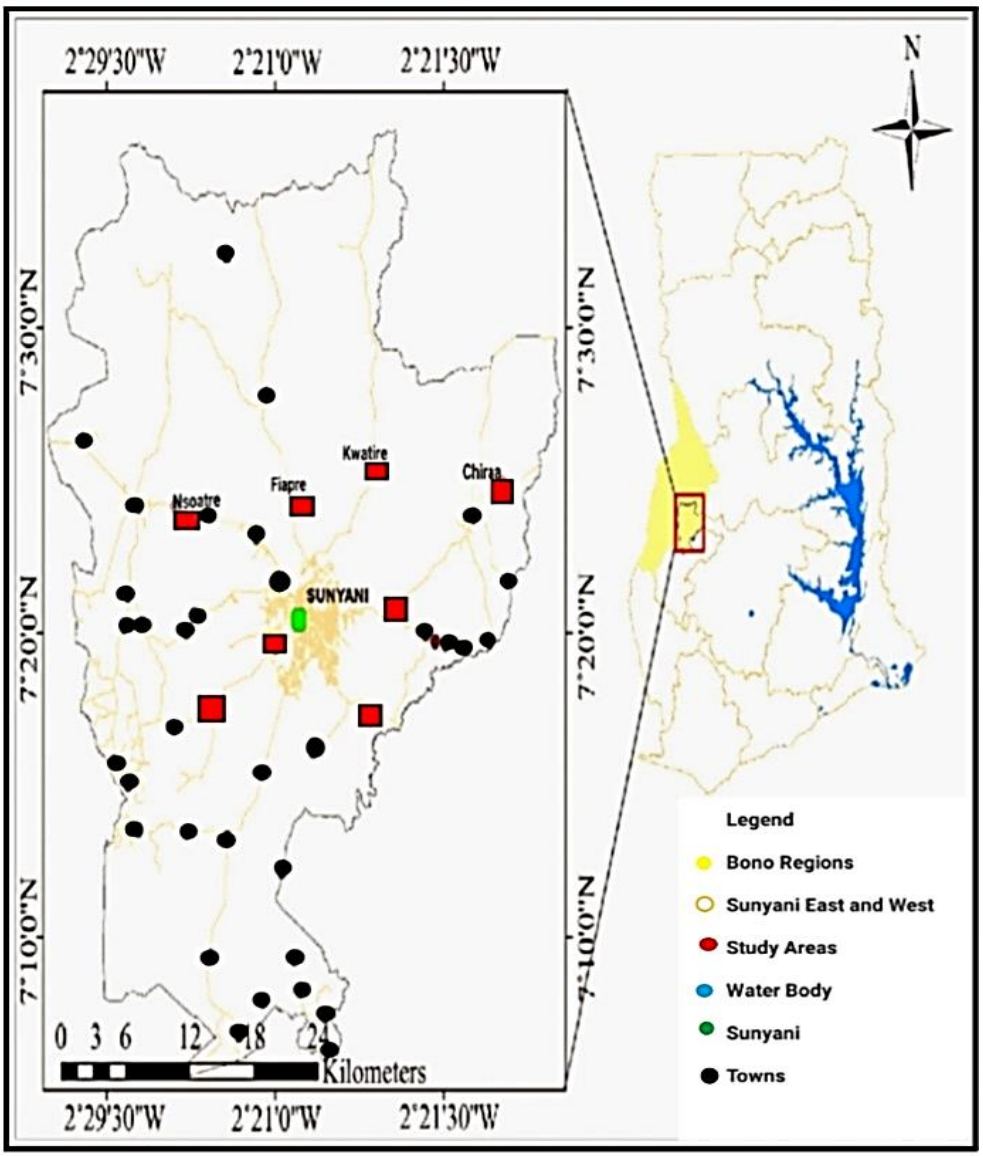

Figure 5: Map of Sunyani East and West (Adapted from Hoflinger, Antwi, Amprofi and Kabo-Bah, 2020).

Population

The target population was postpartum women in the immediate postpartum period. The entire population of mothers in the immediate postpartum period was estimated to be 1,157. This figure was obtained from the records of the eight selected hospitals based on the estimated monthly total number of women accessing maternal and child healthcare services (delivery care, postnatal care, or child welfare clinics) from the eight selected healthcare institutions: Bono Regional Hospital (270); Seventh Day Adventist Hospital (150); Nsoatre Clinic (120); Sunyani Municipal Hospital (200); Chiraa Clinic (112); Kwatire Clinic (150); Fiapre Health Centre (85); and Owusu Memorial Hospital (70). The study excluded postpartum women who were below 14 or above 49 years old. Postpartum women below 14 were considered young adolescents who needed written permission from their legal guardians to participate in the study. On the other hand, postpartum women over 49 were excluded because they were considered less likely to be fertile. Also, postpartum women who were more than eight weeks old after delivery were excluded because they did not fall into the immediate postpartum period.

Sampling Procedure

An analysis of attendance records from the eight selected healthcare institutions showed that an average of 1,157 postpartum women sought maternal healthcare services every month. This study focused on a cohort of 903 postpartum women because they were those in their immediate postpartum period, which accounted for approximately 78% of the total population.

A multistage sampling procedure was adopted for the selection of participants. At stage one, Sunyani Municipal Area healthcare institutions were categorised into two clusters: the Sunyani East Municipal Assembly and the Sunyani West District Assembly. The Sunyani East Municipality has well-equipped hospitals serving as referral centres, providing a wide range of maternal healthcare services. Sunyani West District Assembly, on the other hand, has clinics that provide basic or uncomplicated maternal healthcare services. The cluster sampling technique was employed in order to improve the homogeneity of the population inside each cluster. There are 31 healthcare institutions in the Sunyani East Municipality and 17 in the Sunyani West District.

At stage 2, eight (8) healthcare institutions that provide ANC, delivery, and PNC, or child welfare care services, were purposefully selected from the developed framework. The sample frame of the study included all health facilities in Sunyani East Municipality and Sunyani West District. However, only hospitals with higher health amenities were selected from Sunyani East Municipality. In Sunyani West District, only governmental clinics with a resident medical doctor or physician assistant were used. Purposive sampling is a non-probability method in which the researcher selects the study participants based on the researcher's judgement as to which ones would be most productive or answer the research questions (Loiselle et al., 2004). The justification for this selected procedure is that the eight selected healthcare institutions provide maternal healthcare services, with a diversity of postpartum women accessing maternal and child healthcare services at the lying-in ward, postnatal clinic, or child welfare clinic, and in the catchment

areas of the participants. Furthermore, an equal number of healthcare facilities were selected to ensure maximum statistical power.

At stage 3, the convenience sampling technique was used to recruit the postpartum women who consented to participate in the study from each selected healthcare institution. Convenience sampling was used because it facilitated the collection of large amounts of data within a short period of time (Loiselle et al., 2004). Again, this technique was ideal for the researcher because the population list for random sampling could not be established as postpartum women coming for healthcare services at the health institutions come at their own convenient time of the day. The number of participants in the study was distributed proportionally among the selected healthcare facilities, according to the monthly attendance records of postpartum women at each facility, as stated in Table 1.

Table 1: Sample Size by Selected Health Facilities

Facility	Estimated sample size
Bono Regional Hospital	200
SDA Hospital	120
Sunyani Municipal Hospital	170
Owusu Memorial Hospital	40
Nsoatre Clinic	116
Chiraa Clinic	107
Kwatire Clinic	120
Fiapre Health Centre	30
Total	**903**

Source: Field Survey (2021)

The following is information on the participants' background characteristics, which include age, educational level, employment status,

income level, religion, ethnicity, marital status, parity, desire for more children, and sex preference. Refer to Appendix E for details.

The study participants were postpartum women of reproductive age range from 14 to 49 years old, with the majority of the participants, 66% (n=594), in the 20–25 and 26–30 year age groups. A small proportion of 2% (n=17) was in the 41–45 year age group. Regarding educational level, an overwhelming majority, 79% (n=713) of participants, had at least completed junior high secondary (39%), senior high school (26%), or tertiary level education (14%). Concerning employment status, the highest proportion, 89% (n=800) of postpartum women, were employed at the time of the survey, whereas 11% (n=103) were unemployed. Among postpartum women employed, 47% (n=424) earned below Gh¢ 500.00, and 13% (n=119) earned between Gh¢ 1,000 and 3,000. Also, the religious orientations of the participants showed that the overwhelming majority, 85% (n= 770), belonged to the Christian denomination, and 13% (n=115) were Muslims. The Akans formed the largest ethnic group, with more than half of postpartum women, 51% (n= 460), belonging to this group, followed by the Dagati, which accounted for 12% (n= 109). With Ga/Adangbe forming the least 5% (n= 43),

Participants' marital status showed that more than nine out of ten, 95% (n= 855), were married or living together, whereas 5% (n= 43) were single parents. With geographical location, 59% (n= 530) reside in Sunyani East, and 41% (n= 373) are Sunyani West residents. Concerning the reproductive characteristics, 44% (n= 394) of the postpartum women had become pregnant three to four times, 38% (n= 342) had been pregnant one to two times, with the least 15% (n = 139) among those participants who had been pregnant five

to six times. Also, 32% (n= 293) of postpartum women had delivered twice, 28% (n= 252) of those who had delivered thrice, and 12% (n= 106) had delivered four times. Again, the majority of the participants, 80% (n= 723), had one to three live children, whereas 4% (n= 33) had more than five live children.

Women's desire for children may influence their use of modern contraceptive methods. Three out of four participants, 75% (n= 681), desired more children, whereas 25% (n= 222) did not want more children. Of the 681 participants who desired to have more children, 61% (n= 415) answered that sex preference could influence their parity, and 39% (n= 266) believed that sex preference could not influence their parity.

Data Collection Instrument

A questionnaire was used as the main tool to collect the primary data from the participants because, in quantitative studies, the questionnaire is appropriate to answer all research questions. The questionnaire is also seen as relatively fast and valuable for collecting primary data when the number of participants involved in the study is enormous. However, when using a questionnaire in a research study, there is a likelihood that some respondents will misinterpret or misunderstand the questions (Loiselle et al., 2004). The researcher used short sentences and simple language to facilitate easy understanding and prevent misinterpretation. Also, the researcher and the assistants were always on the field to help explain questions in languages participants understood.

The questionnaire was developed with items adapted from the Key Indicators Survey (KIS) and the Ghana Demographic and Health Survey

(GDHS) 2014 questionnaire on family planning. The KIS questionnaire was previously designed to help meet the monitoring and evaluation needs of programmemes involving population and health activities in developing countries through the DHS programme with help from the United States Agency for International Development (USAID). Several studies in developing countries have shown the use of the KIS questionnaire in the family planning survey (Ali, Cleland, & Shah, 2012; MacQuairrie et al., 2019). The KIS questionnaire on family planning consists of five distinct sections, encompassing 52 items.

Section A: The participants' background has a set of seven questions. What is the month and year of your birth? What was your age at the time of your most recent birthday? Have you ever had the experience of enrolling at an educational institution? What is the highest level of education you have attained: primary, secondary, or tertiary? What is the maximum level of education you have achieved: grade, form, or year? What is your religious status? What is the ethnicity of the participant?

Section B has 16 items about reproductive history. Have you ever experienced the process of childbirth? Do you currently have any children residing with you whom you gave birth to? How many male offspring stay with you? How many girls now stay with you? Do you have any living children who currently reside separately from you? What is the number of your children alive but residing with other people? What is the current number of daughters living but staying with other people? Have you ever experienced the unfortunate circumstance of giving birth to a male or female child who initially survived but subsequently passed away? If the answer is no, probe

further: are there any instances of infants who exhibited signs of vitality but died later? What is the total number of males who die? What is the total number of female deaths? Have you experienced one or more childbirths, or none? What is the total number of live births that have occurred throughout your lifetime? Issues about current births, whether still alive or not, starting with the last one: is the infant male or female? During which month and year did you give birth to the baby? Is the infant still alive? Are you currently with a child?

Section C has 18 statements and questions about contraception. Female sterilisation is a surgical procedure that women might undergo to prevent future pregnancies. Male sterilisation is a surgical procedure that prohibits men from future procreation. Pills: women take a daily oral contraceptive pill as a means of preventing unintended pregnancies. Intrauterine devices (IUDs) are medical devices that can be inserted into the womb by healthcare professionals, such as doctors or nurses. Injectable contraception is a method whereby women can receive an injection administered by healthcare providers to prevent pregnancy for a duration of one or more months. Implants are a contraceptive method wherein there is the insertion of multiple tiny rods into the upper arm of the woman. This contraceptive approach effectively inhibits pregnancy for a duration of one or more years. A male condom is a contraceptive method that involves the application of a sheath to the male penis before engaging in sexual intercourse. A female condom is a contraceptive method involving the insertion of a sheath into the vaginal canal by women before engaging in sexual intercourse. There is a method of lactational amenorrhoea (LAM). The rhythm method is a contraceptive

approach that involves abstaining from sexual intercourse during the days of the menstrual cycle when a woman is most fertile, hence reducing the risk of pregnancy. Withdrawal is a contraceptive technique in which males exercise caution and remove the penis from the vagina before ejaculation to prevent pregnancy. Emergency contraception is the use of oral pills within a time frame of up to two days following sexual intercourse to prevent unintended pregnancy in women. Are you familiar with additional methods of contraception that both men and women can use to avoid pregnancy? Have you ever used any contraception or strategies to postpone or prevent pregnancy? Are you presently engaged in any activities or employing strategies to avoid conception? If yes, which specific methods are you using? From where was the current method acquired throughout the most recent occasion? Are you aware of any locations where family planning methods can be purchased?

Section D focuses on marriage and sexual activity, comprising a total of five questions. Are you married or cohabiting with a male partner? Have you ever legally married or cohabited with a male in a manner resembling a marital relationship? What is your current marital status, indicating whether you are married, widowed, divorced, or separated? At what age did you engage in sexual intercourse for the first time? When was the most recent sexual intercourse you experienced?

Section E focuses on six items of fertility preferences: In the absence of pregnancy, do you desire to conceive one or many children, or do you want to abstain from having more children? How long do you want to wait before getting pregnant again? In the event of a pregnancy, would you like to

conceive another child after the delivery of your current pregnancy? Or, after giving birth to the current baby, how long do you want to wait? Do you intend to use contraceptive methods soon to prevent pregnancy? Which contraceptive method would you like to use?

The selected questionnaires were modified by making minor changes in certain response categories and sentences while ensuring that the original meaning or the ideal of the question remained intact. The modifications were made to suit the culture of the study area, the research questions, and the literature reviewed. The study used a 60-item questionnaire (refer to Appendix A for detailed information). The questionnaire consisted mainly of closed-ended questions. The questions covered five sub-sections. Specifically, socio-demographic characteristics of participants, knowledge level of modern contraceptive methods, current modern contraceptive use and ever-use, maternal healthcare services, and attitudes of participants towards modern contraception

Section A of the questionnaire measured participants' socio-demographic characteristics with 14 items (1–14). These items are age, educational level, working status, income level, religious affiliation, ethnicity, marital status, years of marriage, geographical location, gravidity, parity, number of live children, desire for more children, and sex preference. Participants' ages ranged from 14 to 49 years and were categorised into six groups: 14–19, 20–25, 26–30, 31–35, 36–40, and 41 and above. The question on the formal educational level was used to assess their ability to understand and interpret health issues. Participants' level of education was categorised into five levels: no education, primary, junior secondary, senior secondary,

and tertiary. The working status of the postpartum women was to determine whether they were working or not, and if they were working, their income level was assessed. The religious affiliation of participants was determined and classified into six groups: Catholic, Protestant, Muslim, Pentecostal, Traditionalist, and no religion. Participants' ethnicity was grouped into eight groups: Akan, Ewe, Ga/Adangbe, Dagomba, Dagati, Frafa, Kusasi, and Wala. The participants' marital status was categorised into five groups to determine whether they were single, married, living together, separated, divorced, or widowed.

Furthermore, the number of years or months in marriage was assessed if the participants were married. Participants' geographical location was determined and classified as Sunyani East or Sunyani West. The type of location was coded as urban and rural, respectively. The number of times participants had been pregnant was assessed. Parity levels and the number of live births of postpartum women were determined. The number of children living at home was assessed and categorised into six groups: 1, 2, 3, 4, 5, and 6. The desire for more children was asked to determine whether participants needed more after the current child. If participants desire more children, could it be that their particular sex preference influences their decision? Most items demanded a tick in the boxes provided, whereas spaces were provided for participants to write four items.

Section B of the questionnaire has fifteen items (15–29). These items measured the knowledge level of the postpartum women on the various modern contraceptive methods (15–23) and methods that could be used in the immediate postpartum period (24–29). Knowledge of the methods was

measured with the following statements: (I) Female sterilisation: postpartum women can have an operation to avoid having more children. (II) Male sterilisation: men can have an operation to avoid having more children. (III) IUD: postpartum women can have a loop or coil placed inside the womb by a doctor or a nurse after delivery, preventing pregnancy for one or more years. (IV) Injectables: postpartum women can have an injection containing progesterone only by a health provider that stops them from becoming pregnant for one or more months. (V) Implants: A doctor or nurse can place one or more tiny rods containing progesterone in a postpartum woman's upper arm to prevent pregnancy for one or more years. (VI) Pill: Postpartum women can take a pill containing progesterone daily to avoid becoming pregnant. (VII) Male condom: men can put a rubber sheath on their penis before sexual intercourse. (VIII) Female condom: postpartum women can place a sheath in their vagina before sexual intercourse. (IX) Emergency contraception: as an emergency measure, within three to five days after having unprotected sexual intercourse, postpartum women can take special pills to prevent pregnancy. Methods of modern contraception that could be used in the immediate postpartum period were also measured with six (6) items (24–29). The statements are: Can breastfeeding prevent unintended pregnancy?; Can a postpartum woman breastfeed her baby and use modern contraception at the same time? Can a postpartum woman who uses modern contraceptives while breastfeeding her baby have problems with breast milk production and taste? Can a postpartum woman start using modern contraceptives immediately after delivery? Can postpartum women start using the following modern contraceptives: an intrauterine device, sterilisation, and an implant

immediately after delivery? Can the following modern contraceptives—emergency contraceptives, combined pills and injectables, implants, intrauterine devices, condoms, and sterilisation—be used by non-breastfeeding postpartum women immediately after delivery? For items in this section, the responses were Yes and No, rated as No for 0 and Yes for 1. Participants responded by ticking the best option, which depicts their knowledge level of modern contraception use after delivery.

Section C of the questionnaire contained eight items (30–37) to measure participants' current modern contraceptive use and whether they have used modern methods before. Participants' current modern contraceptive use was derived from responses to questions (a) about whether participants have ever used modern contraceptives. (b) Currently, are they using any modern contraceptive methods? Furthermore, (c) if their family's finances influence their decision to use modern postpartum contraceptives, The response options for items 30-32 were Yes and No, rated 1 and 0, respectively. To determine factors influencing current modern contraceptive use or non-use, five items (33–37) were measured: (a) If participants are currently using modern contraceptive methods, what influenced their decision to use them? (b) If the participants are currently using modern contraceptive methods, which form of modern contraceptive are they using? (c) If, currently, the participants are not using any modern contraceptive methods, what influenced their decision not to use them? (d) If participants have ever experienced problems with using modern contraceptives, what problems did they face? (e) Would the participants have used modern contraceptives if they had not experienced any

problems with them? The participants responded by checking the most appropriate option in the right boxes for all the items.

Section D of the questionnaire comprised 12 items (38–49). This section assessed the association between maternal healthcare services (ANC, lying ward, and PNC) received by postpartum women and modern contraceptive usage after delivery. The items were (a) Where did your baby deliver, and (b) Did you attend the ANC during pregnancy? If yes, count the number of ANC visits. Participants were given a space to respond by writing. If No: what are the reasons? Responses were categorised under the attitudes of professionals, transportation, financial constraints, cultural beliefs, religious beliefs, and others. (c) Did you receive any information on modern contraceptive methods at the ANC visit? If yes, which methods did the providers talk about? Responses were classified under female sterilisation, male sterilisation, injectables, pills, male condoms, female condoms, implants, IUDs, emergency contraception, and other modern methods. (d) Did you choose any modern family planning methods during antenatal clinic counselling? If yes, are you currently using the method you chose for ANC counselling? Responses were categorised under Yes and No. (e) Did you receive counselling on family planning after delivery? The response was captured in two groups: Yes or No. (f) Did you receive any information on modern contraceptive methods that can delay or prevent pregnancy during your postnatal visit? If yes, which methods did the providers discuss at the postnatal clinic? Responses were captured as female sterilisation, male sterilisation, injectable pills, male condoms, female condoms, implants, IUDs, emergency contraception, and other modern methods. (g) Did the family

planning service providers tell you about the side effects or problems you may encounter with the various methods? The response was categorised as yes or no.

Section E was about participants' attitudes towards using modern contraceptive methods after delivery, with 11 items (50–60). The statements were: Promiscuous women use modern contraceptives to prevent unintended pregnancy; I think the use of modern contraceptives cannot improve the health of the mother and the child; I think it is very important to use modern contraceptives immediately after delivery until you decide to have another child; Easy access to and use of modern contraceptives will increase the incidence of infidelity. The whole idea of the use of modern contraception is embarrassing to me. It is wrong to use modern contraceptives. Using modern contraception to prevent pregnancy is religiously seen as more sinful than having an abortion. Having one abortion is safer than a daily intake of packs of contraceptive pills; The use of modern contraceptives by women leads to fertility. Sometimes, when a modern contraceptive method is not available, I believe you have to take a chance and hope for good luck to avoid pregnancy. and traditional beliefs regarding sexual relations prohibit me from using modern contraceptives. In this section, participants responded on a four-point rating scale. Responses with positive statements were recorded as follows: strongly agree = 4, agree = 3, disagree = 2, and strongly disagree = 1. While the negative statements were recorded as strongly disagree = 4, disagree = 3, agree = 2, and strongly agree = 1,Strongly agree and agree were coded as one, and disagree and strongly disagree were coded as 0. All the questionnaires were completed and returned, indicating a 100% response rate.

Pretesting of research instrument

A pretest refers to a small-scale trial run of the study to obtain information for improving the project or assessing its feasibility (Loiselle et al., 2004). For the validity and reliability of the instrument to be ensured, the researcher pretested the structured questionnaire on 50 participants having the same characteristics set for the study at Abesim Health Centre in the Bono Region of Ghana. The data from the pretest was analysed, and the reliability coefficient was reported by the Kuder-Richardson formula 21 (KR-21). Based on the findings from the pretest survey, some modifications were made to the questionnaire to make it clear and devoid of ambiguity or problems prior to the actual study. Corrections were made with some research questions rephrased for better understanding, others demanding specific answers instead of ranges, and some open-ended questions being changed to closed-ended.

Validity of the instrument

Validity describes a situation where an instrument measures what it is supposed to measure (Loiselle et al., 2004). Validity is a quality standard that looks at the extent to which inferences made in a research study are correct and well-founded (Polit & Beck, 2014). The current research questionnaire measures modern contraceptive use among postpartum women in their immediate postpartum period in healthcare institutions. To ensure content and construct validity, after using the literature reviewed, the questionnaire was given to a panel of experts consisting of medical doctors and public health nurses who are specialists in reproductive healthcare services. The panel was tasked with evaluating the questionnaire's comprehensiveness in the area of

family planning. The supervisors also scrutinised and ascertained how well the idea of the research questions was accurately represented in the questionnaire.

Reliability of the instrument

Reliability is a measure of how accurate and consistent an instrument's measurement is and how free it is from measurement error (Polit & Beck, 2014). To ensure internal consistency reliability, a pretested questionnaire was used at Abesim Health Centre in the Bono Region. The researcher also took steps to minimise bias from data collectors by specifically selecting postpartum mothers in their immediate postpartum period and asking simple, clear, and understandable questions. Again, KR-21 was computed for each section of the questionnaire. A KR-21 score exceeding 0.70 indicates an acceptable degree of internal consistency reliability. The overall KR-21 of the research questionnaire of 0.82 suggests a significant correlation among the items in the questionnaire. Refer to the table below for the KR-21 scores of the questionnaire.

Table 2: Kuder-Richardson 21 Scores of the Questionnaire

Sections of Questionnaire	Kuder-Richardson 21 (KR-21)
A: Socio-demographic characteristics predicting the use of modern contraception after delivery.	0.77
B: Level of knowledge on modern contraceptive methods and it utilisation after delivery.	0.80
C: Current modern contraceptive use and ever use	0.71
D: Provision of maternal healthcare services	0.83
E: Attitude towards modern contraception	0.80

Data Collection Procedures

Before going to the study area, an introductory letter from the Department of Health, Physical Education, and Recreation was used to obtain permission. Ethical clearance from the Institutional Review Board (IRB) at the University of Cape Coast with ID: UCCIRB/CES/2020/43 was also obtained before the start of the research. The reason for asking for written permission from the IRB was to ensure all ethical considerations in the conduct of the research had been adhered to and appropriate steps had been taken to protect the rights and welfare of participants in the study. Permission was also sought from the Ghana Health Service in the Brong Ahafo Region, the Chief Executive Officer (CEO), Director of Nursing Services (DNS), and Deputy Director of Nursing Services (DDNS) in charge of the reproductive and child healthcare units, and other authorities in charge of the various hospitals to use the hospital premises for the study. Data were collected after permission had been sought.

At the healthcare facilities, the researcher and the research assistants introduced themselves to the postpartum women, after which further interactions were done at the facilities. The reason for the meeting was explained, and all participants' concerns were addressed before the actual interaction began. The researcher informed the participants that their privacy and confidentiality had been ensured by providing them with a quiet place free from interruptions, keeping their filled questionnaires safe, and avoiding identification such as their names on the questionnaire. Each participant was given a code to agree upon. They were also told they had the right not to answer the questionnaire or retire from the study. Participants were assured

that there would be no risk involved in the study except that part of participants' time and some invasion of their privacy would be affected. The researcher gave interested participants an informed consent form to sign or thumbprint individually after agreeing to participate in the research. The researcher and the two research assistants administered the questionnaires to the participants for them to answer or tick in the English language. With the help of experts from the Ghana Bureau of Languages, the questionnaire was translated from English into four local languages: Asante Twi, Bono, Fante, and Ga. These are languages that the participants were comfortable speaking, and it helped them to answer the questionnaire. The translation of the questionnaire into the local dialect was done to enhance consistency with those answering in English. All the participants completed the questionnaires in the presence of the researcher and the research assistants. The procedure was done to prevent participants from giving questionnaires to others to complete on their behalf. Participants were encouraged to answer items on the questionnaire lasting about 25–30 minutes but were not coerced to answer any question against their wishes. The researcher and research assistants were in the study area to collect data until postnatal care or child welfare clinics closed. The researcher and research assistants spent approximately five hours a day and were able to get between 10 and 12 participants to complete the questionnaire each day. The researcher and research assistants spent two weeks at each health facility, and a total of sixteen weeks were spent on the field for the data collection exercise.

Data Processing and Analysis

Data analysis involves the systematic organisation and synthesis of research data. Quantitative studies involve answering research questions or testing hypotheses using those data (Polit & Beck, 2014). The data collected from participants was organised and analysed using the Statistical Package for Social Sciences (SPSS) software version 22.0. Before entering the data, the questionnaires were checked for completeness, consistency, and accuracy by the researcher and research assistants, and all incomplete ones were discarded. Completed questionnaires were coded by giving numbers to all the items in the questionnaire, after which questionnaires were arranged in orderly order to prevent data entry errors. Data were screened visually and statistically to ascertain accuracy and detect any missing data. Also, check for outliers, if any, after the data has been entered into the SPSS software. The researcher and the two research assistants did not detect any missing values. The data from the study were analysed using both inferential and descriptive statistics. The type of statistical procedure used for the analyses depended on each research question, the type of items on the instrument, and the scales used. Pearson's Chi-square test, binary logistic regression, and frequencies answered the research questions. The statistical analyses brought clarity and consistency to the data analysis.

Research Question 1: What is the knowledge level of postpartum women in the Sunyani municipal area of the Bono Region on modern contraceptive methods, and how does it influence the use of modern contraceptives after delivery? The question was posed to investigate whether the participants have high, moderate, or low knowledge of modern

contraceptive methods and whether there is any relationship between postpartum women's knowledge level (an independent variable) and modern contraceptive usage after delivery (a dependent variable). Descriptive statistics of frequencies were used to analyse the data to determine the level of knowledge about modern contraceptive methods. Descriptive statistics were used because the variable under study was grouped into no meaningful order categories. The research question was to report on the levels of knowledge that these postpartum women in their immediate postpartum period have about modern contraceptive methods. The scores of postpartum women greater than a frequency value of 550 (i.e., a number of "yes" choices) indicate high knowledge; a score value equal to 550 indicates moderate knowledge; and a score value less than 550 indicates having low knowledge. The choice of 550 is in relation to the study population, which was slightly more than sixty percent (60%).

Pearson's Chi-square static test for association was used to determine if there is an association between knowledge level and modern contraceptive usage after delivery. Pearson's Chi-square test is a non-parametric test used to test the hypothesis or answer the research question to determine whether there is or is not an association between two categorical variables. These variables could have two or more categories (Pallant, 2007; Rana & Singhal, 2015). Pearson's Chi-square test of the association was used because the independent variable, measured at the ordinal level, has three categorical groups (high, moderate, and low knowledge levels of modern contraceptive methods). The dependent variable, measured at the nominal level, has two categorical groups (use and non-use of modern contraceptives).

Research Question 2: What is the influence of the attitude of postpartum women in the Sunyani municipal area of the Bono Region towards modern contraceptive use after delivery? This research question aimed to assess if having positive or negative attitudes would influence modern contraceptive use among postpartum women. Data were analysed using the Pearson Chi-square statics test for the association because the independent variable, attitude (categorise into positive or negative attitude), and the dependent variable, modern contraceptive use (categorise into use and non-use of modern contraceptives), were categorised into groups. To assess whether postpartum women have a negative or positive attitude towards modern contraceptive use in the immediate postpartum period, eleven statements on a Likert scale with four points (strongly agree, agree, disagree, and strongly disagree) were used. Responses with positive statements were accorded as follows: strongly agree = 4, agree = 3, disagree = 2, and strongly disagree = 1. On the other hand, the negative statements were accorded as strongly disagree = 4, disagree = 3, agree = 2, and strongly agree = 1. The mean score was calculated to determine the respondent's attitude. For each individual statement, a mean score greater than 2.5 indicates a positive attitude, and a score less than 2.5 indicates a negative attitude. The overall mean score was also used to discuss the overall attitude of postpartum women towards the utilisation of modern contraception in the immediate postpartum period.

Research Question 3: What is the influence of the maternal healthcare services obtained at the hospital by the postpartum women in the Sunyani municipal area of the Bono Region on utilising modern contraceptives after delivery? The question was asked to assess whether obtaining maternal

healthcare (ANC, delivery, and PNC) services would influence modern contraceptive use among women in their immediate postpartum period. A Pearson Chi-square statistics test for association was used to assess whether there is a relationship between the independent variable (maternal healthcare services, which is categorical) and the dependent variable (modern contraceptive use, which is also categorical).

Research Question 4: What is the difference in the use of modern contraceptive methods after delivery between urban and rural postpartum women in the Sunyani municipal area of the Bono Region? The Pearson Chi-square statistics test was again used to analyse the data to determine whether there is a difference between the categorical dependent variable, modern contraceptive use (use or non-use of modern contraceptives), and the categorical independent variable, the geographical location of the postpartum women (i.e., rural and urban areas).

Research Question 5: Which socio-demographic characteristics (age, education, working status, marital status, religion, parity, number of live children, desire for more children, and sex preference) predict modern contraceptive use among postpartum women in the Sunyani municipal area of the Bono Region? Binary logistic regression was used to explain the data and reveal the association between a binary dependent variable and one or more nominal, ordinal, interval, or ratio-level independent variables (Pallant, 2007). Binary logistic regression analysis was used because the researcher explored the relationship between two categories of variables: socio-demographic variables (an independent variable) and modern contraceptive use or non-use

(a dependent variable). There were nine questions under which information on the socio-demographic characteristics of the participants was obtained.

Summary

The study investigated the use of modern contraceptives among women in their immediate postpartum period in the Sunyani municipal area of the Bono Region of Ghana. The research design was quantitative, using a descriptive cross-sectional approach. The rationale for the choice of the research design was to allow the researcher to obtain current information about participants' actions, beliefs, knowledge, intentions, opinions, preferences, and attitudes about the use of modern contraceptive methods during the immediate postpartum period through direct questioning. A quantitative measurement tool (a questionnaire) was used to generate the information needed.

The study used a questionnaire to answer the following research questions: (i) What is the knowledge level of postpartum women on the use of modern contraceptive methods in the postpartum period, and how does this knowledge influence their modern contraceptive usage? (ii) What is the influence of the attitude of postpartum women towards modern contraceptive use after delivery? (iii) What is the influence of maternal healthcare services obtained at the hospital by postpartum women on modern contraceptive methods used after delivery? (iv) What is the difference in using modern contraceptive methods between urban and rural postpartum women? (v) Which socio-demographic variables (age, education, working status, religion, marital status, parity, number of live children, desire for more children, and sex preference) predict modern contraceptive use among postpartum women?

The participants for the study were women in their immediate postpartum period from eight health institutions, namely: Bono Regional Hospital, Sunyani Municipal Hospital, Seventh Day Adventist Hospital, and Owusu Memorial Hospital from Sunyani East; and Chiraa Clinic, Kwatire Clinic, Nsuatre Clinic, and Fiapre Health Centre from Sunyani West. A multistage sampling method was used for the study to select 903 eligible participants from the target population. The estimated population of 1,157 was obtained from a month's attendance records at all eight facilities.

The research instrument for the collection of data was a self-completion questionnaire, which covered the literature review and also incorporated Likert scale statements for completion by participants. Research instrument validation was done to ensure the data collected satisfied content validity, construct validity, and reliability. The data collection procedure addressed ethical issues by securing the participants' informed consent, privacy, and voluntary participation.

Inferential statistical data analyses were used for answering research questions involving descriptive statistics, the Pearson Chi-square test, and binary logistic regression analysis through the use of SPSS software 22.0. The stated inferential statistics were used based on the assumption that the independent variables under study are categorical and the dependent variables are binary.

CHAPTER FOUR

RESULTS AND DISCUSSION

The study sought to investigate modern contraceptive use among immediate postpartum women in the Sunyani municipal area of the Bono Region of Ghana. This chapter presents the results in frequency distributions, proportions, Chi-Square, and logistic regression test statistics. The chapter also utilises tables to represent the data and the use of previous literature to discuss the findings and make inferences on modern contraceptive knowledge and use among postpartum women.

Respondents used for the study were 903 (i.e., 530, Sunyani East; 373, Sunyani West) from eight health institutions in Sunyani municipal area. All the respondents were women in their immediate postpartum period and completed and returned the research questionnaires, indicating a 100% completion and response rate.

Research Question One: What is the Knowledge Level of Immediate Postpartum Women in Sunyani Municipal Area on Modern Contraceptive Methods, and How it Influences the Use of Modern Contraceptives?

This research question assessed the knowledge level of immediate postpartum women on modern contraceptive methods after delivery and whether the knowledge influenced their usage of modern contraceptives. Frequency distribution and Pearson's Chi-square of association tests were prepared to assess and establish postpartum women's knowledge of modern contraceptive methods and their usage. A score of respondents greater than a frequency value of 550 to 'Yes' choices was termed high knowledge, equal to

550 as moderate knowledge, and below 550 as low knowledge. The scores were aggregated, and the responses are presented in Table 3.

From Table 3, the majority of the respondents, 83% (n= 746), did not know about female sterilisation, while 17% (n= 157) knew the method. Concerning the male sterilisation method, the majority of the respondents (95%, n= 857) exhibited a lack of knowledge, while a minority (5%, n= 46) showed knowledge regarding male sterilisation. In terms of using an intrauterine device (IUD) as a method of contraception, 32% (n= 288) knew about IUD, while 68% (n= 615) respondents did not know about IUD. The data on injectables showed that most of the respondents, 75% (n= 676), had knowledge of their use, whereas 25% (n= 227) did not know this method. In addition, 65% (n= 587) of the respondents knew about implants, compared to 35% (n= 316) who did not know about implants. The results showed that 92% (n= 834) of the respondents had knowledge of male condoms. However, 8% (n= 69) did not know about male condoms. For female condoms, 37% (n= 332) knew, while the majority, 63% (n= 571), did not know about this method. The proportion of respondents who knew about emergency contraception was 41% (n = 367) against 59% (n= 536) who did not know this contraception method. Results also revealed that more than half of the respondents, 57% (n= 513), had knowledge of pills as a method of contraception, while 43% (n= 390) did not know about the pills.

When asked, “Can breastfeeding prevent unintended pregnancy?" 68% (n= 612) of the respondents answered yes, while 32% (n= 291) answered no. Again, when asked, “Can a postpartum woman breastfeed and use modern contraceptives at the same time?” below the average number of respondents,

47% (n= 427) answered yes, while slightly above the average of the respondents, 53% (n= 476) answered no. Concerning the question, “Can a postpartum woman who uses modern contraceptives whilst breastfeeding her baby have problems with breast milk production and taste?" 42% (n= 378) respondents answered yes to the question, while 58% (n= 525) said no.

Again, only 9% (n= 77) of the postpartum women answered yes to the question, “Can a postpartum woman start using modern contraceptives immediately after delivery?” However, the majority, 91% (n= 826), said no to the question. Similarly, 8% (n= 75) of the respondents answered yes to the question, “Can postpartum women start using the following modern contraceptives: IUD, sterilisation, and implant immediately after delivery?” while the majority, 92% (n= 828), answered no to the question. The result showed that 28% (n= 256) answered yes when asked, “Can non-breastfeeding women use the following modern contraceptives: emergency contraceptives, combined pills and injectables, implants, IUDs, condoms, sterilisation immediately after delivery?” while the remaining 72% (n= 647) answered no. Aggregates of scores from Table 3 showed a total frequency score value of 375 ‘Yes’ choices (5,625 divided by 15 questions) and 528 ‘No’ choices (7,920 divided by 15 questions). The ‘Yes’ frequency score value of 375 is less than the reference figure of 550, which indicates that the total knowledge level of modern contraceptive methods among postpartum women is low.

Again, Table 4 presents aggregates of postpartum women’s level of knowledge of modern contraceptive methods. Postpartum women who scored 70 and above are considered to have high knowledge, 50–69 score as moderate knowledge, and 49 and below as having low knowledge. The

majority, 75% (n= 678) of the postpartum women, had a low knowledge level, followed by 21% (n= 192) with moderate knowledge and 4% (n= 33) with high knowledge.

Table 3: Knowledge on Modern Contraceptive Methods after Delivery

Statements	Yes	Percentage	No	Percentage
Female sterilization	157	17.4	746	82.6
Male sterilization	46	5.1	857	94.9
Intrauterine devise (IUD)	288	31.9	615	68.1
Injectables	676	74.9	227	25.1
Implants	587	65.0	316	35
Male condom	834	92.4	69	7.6
Female condom	332	36.8	571	63.2
Emergency Contraception	367	40.6	536	59.4
Pill	513	56.8	390	43.2
Can breastfeeding prevent unintended Pregnancy?	612	67.8	291	32.2
Can a postpartum woman breastfeed and use modern contraceptive at the same time?	427	47.3	476	52.7
Can a postpartum woman who uses modern contraceptive whilst breastfeeding her baby have problems with breast milk production and taste?	378	41.9	525	58.1
Can a postpartum woman start the use of modern contraceptive immediately after delivery?	77	8.5	826	91.5
Can postpartum women start using the following modern contraceptive; IUD, sterilization and implant immediately after delivery?	75	8.3	828	91.7
Can the following modern contraceptives; Emergency contraceptives, combined pills and injectables, implants, IUD, condom, sterilization be used by non-breastfeeding women immediately after delivery?	256	28.3	647	71.7
Total of Frequency	5, 625	41.5	7, 920	58.5

Multiple responses

Source: Field Survey (2021

Table 4: Level of Knowledge on Modern Contraceptive Methods after Delivery

Level of knowledge on modern contraceptives after delivery	Frequency	Percentage (%)
Low knowledge	678	75
Moderate knowledge	192	21.3
High knowledge	33	3.7
Total	903	100

Source: Field Survey (2021)

Furthermore, a chi-square test of association was computed to determine whether respondents' knowledge level of modern contraceptives would influence their usage, with the results presented in Table 5.

The results showed that of all the 903 respondents who took part in the survey, 26% (n= 237) had never used modern contraceptives before, 68% (n= 614) had previously used the methods, and 6% (n= 52) of the postpartum mothers are currently using modern contraception. With the current users of modern contraception, only 14% (n= 7) of these postpartum women had a high knowledge level of modern contraceptive methods. The result also showed a statistically significant association between the knowledge level of modern contraceptive methods and their utilisation after delivery $\chi 2$ (2, 903) = 36.57, *P*= .001).

Table 5: Chi-square Test of Association between Level of Knowledge and Modern Contraceptives Use after Delivery.

Categories of contraceptive usage	Level of knowledge on modern contraceptives (n%)			Total	χ^2	*P*-value
	Low knowledge	Moderate knowledge	High knowledge			
Never-used	185(78.1)	46(19.4)	6(2.5)	237(26.2)	6.57	0.001*
Previous users	472(76.9)	122(19.9)	20(3.2)	614(68)		
Current users	21(40.4)	24(46.1)	7(13.5)	52(5.8)		
Total	678(75.0)	192(21.3)	33(3.7)	903(100)		

*Significant at 5% level ($P < 0.05$): significant association between the variables

Acquiring knowledge about contraceptive methods is essential to accessing family planning services and adopting a suitable method (GDHS, 2014). The knowledge level of postpartum women on modern contraceptive methods was assessed based on the assumption that the higher the knowledge level, the higher the possibility of practicing current contraceptive usage. The results from the study revealed that the overall knowledge level of postpartum women on the various methods of modern contraceptives that can be used during the postpartum period and when they can be used was 42%, which was below average. 4% of respondents had a high level of knowledge about modern contraceptives, while 21% had a moderate level of knowledge and 75% had a low level.

The present finding corroborates previous research (Rios-Zertuchea et al., 2017; Coomson & Manu, 2019; Sharma et al., 2015). For example, Rios-Zertuchea et al. (2017) found that knowledge of modern contraceptive

methods was highly unknown among postpartum women living in the poorest areas of Central America. On average, respondents knew only two methods of modern contraception. Other studies also reported similar results from Coomson and Manu (2019) and Sharma et al. (2015), which revealed that only 42% and 30% of respondents, respectively, had adequate knowledge of the modern methods of contraception and their correct use. A plausible reason for the similarities in the findings could be assigned to the fact that detailed and accurate information on modern contraception methods to address the unmet needs of women is not getting down to the community level, leading to low knowledge of modern contraception and its utilisation (Ndayizigiye et al., 2017).

The current finding is inconsistent with several other studies (Beson et al., 2018; Skrzeczkowska et al., 2015; Boamah et al., 2014; Aryeetey et al., 2010; as cited in Hindin et al., 2014; Hagan & Boxton, 2012), where knowledge on methods of modern contraception was high (98%, 81%, 98%, 97%, and 81%, respectively). In addition, results of other studies from Nigeria, Osaro et al. (2017) and Agbo et al. (2020), also revealed that knowledge levels among postpartum women on modern contraceptive methods were 63% and 97.4%, respectively. The possible explanation for the vast majority could be attributed to how family planning counselling services were conducted. The use of social and behavioural change communication strategies in the form of regular, well-coordinated family planning programmes and cordial interactions between healthcare providers and the communities where the other studies were conducted led to a possible increase in the knowledge level of modern contraception (Banerjee et al., 2013).

In the study, the male condom was the most commonly known modern contraceptive method (92%). Plausible reasons could be that male condoms are readily available not only at health facilities but also at pharmacy and chemist stores. A male condom has dual protection because, when used correctly, it protects the individual from getting sexually transmitted infections and also prevents unplanned pregnancies (Ayele et al., 2021). Injectables were the second-most common method known. The current finding corroborates the discovery of Osaro et al. (2017), where injectables were the second most widely known modern contraceptive among respondents. Usually, most teachings on modern postpartum family planning methods are tailored towards injectables because they are readily available and accessible methods besides male condoms and implants at the healthcare facilities in the municipality. Another reason could probably be that healthcare workers are more comfortable performing injectable procedures compared to other techniques (insertion of intrauterine devices, implant insertion, male and female sterilisation) where the most proficient healthcare providers are needed (Chilinda et al., 2020; Gebremariam & Gebremariam, 2017). From respondents' perspective, injectables provide and maintain privacy as relatives, friends, husbands, or partners are less likely to know the usage of this type of modern contraceptive method after delivery by women as a precautionary measure against unplanned pregnancies (Beson et al., 2018; Eliason et al., 2014).

A low knowledge level of modern contraception could result in low or poor use of modern contraceptive methods after delivery. The current study found that the overall usage level of modern contraceptive methods among

postpartum women was 6%. The usage and knowledge levels of modern contraception achieved by this study were lower than the 23% and 99% reported in GDHS 2014 for all females aged between 15 and 49 years. The observation made in the current study could partly be that the respondents do not have adequate information about modern contraceptives that can be used in the immediate postpartum period (Ahinkorah, 2020). Inadequate knowledge becomes a barrier, preventing postpartum women from making informed decisions about modern contraceptive methods. Drawing from the health belief model, which guided the study, an individual may perceive a health condition as frightening and threatening and believe that taking action will effectively reduce the threat, which could have barriers preventing the person from engaging in health-promoting behaviour (Ulrich, 2017). The study also used a facility-based cross-sectional survey involving women in their immediate postpartum period and attending a postnatal clinic. The report from GDHS 2014 used a household survey involving all women of reproductive age. This finding also corroborates a study in West Africa by Olagunju et al. (2020) on the knowledge level and factors influencing modern contraceptive use in five countries. The findings showed that slightly more than 8% of the respondents across all countries used modern contraceptives. Most of these respondents from Burkina Faso, Niger, and Nigeria have poor knowledge of modern contraceptive methods, except in Cote d'Ivoire, where respondents had a moderate knowledge level (52%). Findings were similarly reported in other studies by Coomson and Manu (2019) in Ghana, Sharma et al. (2015) in India, and Skrzeczkowska et al. (2015) in Poland, where postpartum women's modern contraceptive usage and knowledge levels were found to be low.

Generally, when most postpartum women are in their prime ages and start building their families, the fear of future infertility and bareness with its consequences of being divorced and facing social isolation restricts their use of modern contraceptives (Cohen et al., 2020). This might have been reflected in the low usage of modern contraceptive methods after delivery among postpartum women in the present study.

The finding also supported other studies from Asian and sub-Saharan African countries, which revealed that the prevalence of modern contraceptive methods among respondents was low (Ekholuenetale et al., 2021; Ba et al., 2019; Rokade et al., 2018; Bajracharya, 2015). A possible explanation for the similarities could be due to the perceived reduced libido by the women and ineffective health talks on the possible side effects of family planning methods (Rutaremwa et al., 2015; Ochako et al., 2015). The finding implies that higher and more intense health education on the possible side effects of modern contraception might have increased the usage level.

The study finding contradicts other studies from different geographical settings (Kenya, Moon et al. [2021]; Bangladesh, Haque et al. [2020]; Uganda, Alege et al. [2016]; India, Singh et al. [2016]), which found a high level of modern contraceptive use among respondents coupled with high levels of knowledge on modern contraceptive methods. Observed differences in usage levels among postpartum women from these countries could be attributed to how education on contraceptive methods was delivered to respondents' understanding and how frequently messages were given, and differences in the characteristics of the population might have led to the high use of family planning methods in the other studies. Similarly, Semachew

Kasa et al. (2018) reported that the use of modern contraceptive methods among respondents was average (50.4%), despite having a low knowledge level. The differences in the usage of modern contraceptive methods after delivery could be that the current study used women who had delivered from day one to eight weeks and attended the postnatal clinic for physical health assessment. These women in their immediate postpartum period may not use modern contraceptive methods, probably because they have not resumed menstruation and sexual activities after delivery, leading to low usage (Getaneh et al., 2021). The act of deferring the use of modern contraception until the onset of menstruation is deemed dangerous, since a recent study conducted by Chauhan and Tadi (2022) has shown that ovulation can initiate even in the absence of menstruation, potentially leading to unplanned pregnancies. Again, misconceptions that using modern contraceptive methods affects the quality and quantity of breast milk production and the baby's health status could also account for the current finding (Dev et al., 2019).

Research Question Two: What is the Influence of Attitude of Immediate Postpartum Women in Sunyani Municipal Area on Utilising Modern Contraceptives after Delivery?

This research question examined how the attitudes of postpartum women influence modern contraceptive methods used after delivery. Issues about the attitudes of immediate postpartum women were assessed by asking these women whether they agreed or disagreed with eleven statements about modern contraceptive methods and usage. The study used a Likert scale and Pearson's Chi-square test to determine if postpartum women's attitudes influenced and predicted the use of modern contraceptives after delivery. The results obtained have been presented in Table 6 (Refer to Appendix F and G

for detailed responses to the eleven statements on the Likert scale and the Mean score).

From the data presented in Appendix G, postpartum women in their immediate postpartum period have a positive attitude towards the use of modern contraception after delivery, with an overall mean score of 2.65 and a standard deviation of 0.510. The value of the standard deviation indicates that women's attitudes towards the different aspects of modern contraception after delivery are consistent. According to this data, postpartum women favor modern contraception. The results also showed that all negative statements were rated above 2.5 on average, indicating a generally positive attitude towards them. However, one of the positive statements had a mean score below 2.5, which suggests a negative attitude towards that particular category.

Table 6 results show that 91% (n= 821) of the respondents have a positive attitude towards modern contraceptive use. These postpartum women disagreed with the statement that promiscuous women use modern methods of contraception to prevent unintended pregnancy, while 9% (n= 82) agreed with the statement. The proportion of postpartum mothers who disagreed that modern contraception could not improve the health of the mother and child was 83% (n= 750), compared to 17% (n= 153) who agreed. The result also showed that the majority of the postpartum women, 75% (n= 676), showed a positive attitude towards contraceptive use as they agreed with the statement that it is imperative to use modern contraceptive methods immediately after delivery until a decision to have another child, whereas 25% (n= 227) disagreed with the statement. Regarding whether easy access and use of modern contraceptive methods will increase the incidence of infidelity, 92%

(n= 827) of the postpartum women disagreed with the statement, showing their positive attitude towards modern contraception. However, 8% (n= 76) of the postpartum women agreed with the statement. Considering modern contraception is embarrassing, 71% (n= 644) of respondents disagreed, while 29% (n= 259) agreed with the statement. The majority, 74% (n= 670) of the respondents, disagreed with the assertion that it is wrong to use modern contraceptives, whereas 26% (n= 233) strongly agreed with the statement. Concerning whether the use of modern contraceptives to prevent pregnancy is more religiously seen as sinful than having an abortion, 82% (n= 740) of postpartum women disagreed with the statement. In comparison, 18% (n= 81) strongly agreed with it.

Generally, almost all the postpartum women, 98% (n= 885), disagreed that having an abortion is safer than a daily intake of packs of contraceptive pills. However, 2% (n= 18) of the postpartum women agreed with the statement. On the issue of modern contraceptive use leading to fertility, most of the postpartum women (83%; (n= 746) strongly disagreed with the statement that using modern contraceptives by women could lead to fertility.

In comparison, only 17% (n= 157) agreed. The results further showed that 65% (n= 589) of respondents agreed that sometimes, when modern contraceptive methods are unavailable, you can have sex with the hope of not getting pregnant. However, 35% (n= 314) disagreed with the assertion. Also, a higher proportion of postpartum women, 94% (n= 848), showed a positive attitude when they disagreed with the statement that traditional beliefs regarding sexual relations prohibit them from using modern contraceptives. However, 6% (n= 55) agreed with the statement.

Altogether, the results revealed a statistically significant association between all the statements and respondents' attitudes towards modern contraception, as shown by their p-values in Table 6. These results indicate that the attitudes of postpartum women towards modern contraception, whether positive or negative, would influence the usage of the methods. The expectation is that the positive attitude of the respondents will increase the likelihood of using modern methods, while the negative attitude will decrease the odds of using them.

The attitude of postpartum women towards modern contraceptive usage could be considered a critical phase of their reproductive cycle because attitudes become habits and ultimately translate into practice (Verplanken & Orbell, 2022). An evaluation of attitudes towards modern contraceptive usage showed positive attitudes among the studied postpartum women. Positive attitudes demonstrate a healthy sign, although there is still a gap between having a positive attitude and its translation into practice. This gap was explained in terms of inadequate knowledge of the various forms of modern contraceptives to use in the immediate postpartum period. It is possible that postpartum women in the current study do not have in-depth information on modern contraceptive methods from healthcare providers that could be used in the immediate postpartum period. Further, patriarchal norms put women in fear of potential physical abuse from husbands or partners when seen using modern methods without their approval, which could hinder the use of modern contraceptives by postpartum women. Societal myths and misconceptions about the effects of modern contraceptive methods on breast milk production

and the child's health could also be a hindrance (Sridhar & Salcedo, 2017; Chebet et al., 2015).

Table 6: Attitude of Postpartum Women Towards the Use of Modern Contraceptives after Delivery

Statements	Positive		Negative		*P-value*
	N	%	N	%	
Promiscuous women use modern contraceptives to prevent unintended pregnancy.	821	91	82	9	.000*
I think the use of modern contraceptive cannot improve the health of the mother and the child.	750	83	153	17	.000*
I think it is very important to use modern contraceptives immediately after delivery until you decide to have another child.	676	75	227	25	.000*
Easy access and use of modern contraceptives will increase the incidence of infidelity.	827	92	76	8	.000*
The whole idea of the use of modern contraception is embarrassing to me.	644	71	259	29	.000*
It is totally wrong to use modern contraceptives.	670	74	233	26	.000*
The use of modern contraceptive to prevent pregnancy is religiously seen as sinful than having abortion.	740	82	163	18	.000*
Having one abortion is safer than daily intake of packs of contraceptive pills.	885	98	18	2	.000*
The use of modern contraceptives by women lead to fertility.	157	17	746	83	.000*
Sometimes when a modern contraceptive method is not available, I believe you just have to take a chance and hope for good luck to avoid pregnancy.	314	35	589	65	.000*
Traditional beliefs regarding sexual relations prohibit me from using modern contraceptives.	848	94	55	6	.000*
Total of frequency	7,332	73.8	2,601	26.2	

Source: Field Survey (2021)

This identified finding is consistent with other cross-sectional studies conducted in Ghana, which showed respondents' positive attitudes towards modern contraceptive practices (Agbeno et al., 2021; Beson et al., 2018). Notwithstanding that, usage of modern contraceptive methods was low. The current finding was also in line with a study by Tesfaye et al. (2012), which revealed that though the knowledge and practice of emergency contraception were deficient, all respondents had positive attitudes towards emergency contraception. Apart from the fear of side effects, the similarities identified suggest that postpartum women may perceive modern contraceptive methods as promoting laziness or causing fatigue, hence the lower usage of modern methods (Chebet et al., 2015). However, previous studies from Alsaedi et al. (2018) and Dasanayake and Dilhani (2018) found that respondents' positive attitudes towards modern contraceptive methods mirrored high user rates. The findings differed from the present study's findings because respondents' previous benefits of using modern contraception and having access to preferred methods might have led to increased usage.

Another key finding of this study was that postpartum women showed a positive attitude towards modern contraceptive use relative to improving maternal and child health. However, the positive attitude did not reflect on the use of modern contraception. The study finding is consistent with studies in Iran and Jordan, which showed that most respondents (85.9% and 95%, respectively) accepted that practicing modern family planning improves maternal and child health. Though respondents had a positive attitude towards modern contraception, utilisation of modern contraceptive methods was 32.7% and 37%, respectively, which was low (Saied, 2021; Mahadeen et al., 2012).

Postpartum women may feel confused about different information obtained from health professionals and that of community folks whose past experiences on the use and adverse effects of using the methods, such as profuse bleeding, raised blood pressure, reduced or lack of sexual arousal, and infertility, are shared with these postpartum women (Ochako et al., 2015). Cultural traditions, practices, and religious beliefs where married women are not allowed to use modern contraceptives, especially condoms, with their husbands could help explain current findings (Saied, 2021).

A higher proportion of postpartum women agreed that it was imperative to use modern contraceptive methods immediately after delivery until a woman decides to have another child. This finding implies that most postpartum women recognise that using modern contraceptives prevents unplanned pregnancy and its associated complications. Consistent with previous studies (e.g., Beson et al., 2018; Coomson & Manu, 2019), this current study found that modern contraceptive methods after delivery are essential for spacing and limiting delivery but help to prevent unplanned pregnancies and reduce maternal and child health complications and deaths, which might occur if modern contraceptives are not used.

The results further showed that 92% of postpartum women disagreed that easy access to and use of modern contraceptives would increase the incidence of infidelity. This positive attitude had not been translated into increased modern contraception practice in the current study, as the usage rate was low (i.e., 6%). This gap could be attributed to myths about the supposed adverse effects of modern contraceptives on the quantity and quality of breast milk production and unpleasant past experiences with modern contraceptive

methods (Dev et al., 2019). This study's finding contradicts other studies (e.g., Mwaisaka et al., 2020; Onasoga et al., 2016), which found that there was a huge perception that the use of modern contraceptives made women promiscuous. Again, a report from Cohen et al. (2020) revealed that unmarried women who use modern contraception were seen as prostitutes.

Other findings showed that the majority of respondents disagreed with the idea that the use of modern contraception was embarrassing. This positive attitudinal behaviour could mean that Ghanaian society is somehow accepting of the practice of modern contraception. However, the rumours of exaggerated rare side effects, such as the delivery of babies with congenital disabilities and anomalies, might have led to a low user rate of 6%. The finding is similar to a study by Ong et al. (2012), which revealed that respondents did not feel embarrassed talking about and discussing modern contraception. The contraception user rate was high (96%) among the respondents. However, 37% of these respondents were at risk of unplanned pregnancy due to ineffective use; 31% used ineffective methods; 61% were inconsistent with contraception; and non-users were 8%. The reason for the differences in the usage rate could be attributed to the study population's characteristics. The current study looked at women in their immediate postpartum period, while the other looked at women who were with their partners but had no intention of getting pregnant. Additionally, the current study looked at only modern contraception and not general family planning practices, where both traditional and modern methods were captured. A contradictory study by Boamah et al. (2014) in Ghana revealed that females in their adolescent years feel embarrassed to talk about contraception with healthcare providers due to sociocultural norms.

This study also showed that most females disagreed that modern contraceptive usage by females could lead to fertility. This finding suggests that almost all the respondents looked at only the birth control aspect of using modern contraceptives without paying much attention to the long-term benefits of hormonal contraception, especially oral pills, which tend to increase fertility rates. This finding might have contributed to the low utilisation of modern contraception. The present finding is consistent with research reports from Cohen et al. (2020), Dansereau et al. (2017), and Ochako et al. (2015), which revealed that women of reproductive age do not use modern contraceptive methods. Respondents are not using modern contraceptives because they believe these hormonal methods lead to the long-term effects of temporary or permanent infertility. Contrarily to this study finding, Aviisah et al. (2018) report on modern contraception among women in their reproductive age suggested that modern contraceptives had caused high fertility rates in Sub-Saharan African countries. This result suggests that more health education and promotional activities are to be organised to debunk couples' impressions about modern contraceptives, causing infertility, which invariably would lead to increased use of modern contraception.

The findings further showed that most postpartum women disagreed that using modern contraceptives was wrong and religiously more sinful than having an abortion. They also disagreed that having one abortion is safer than a daily intake of contraceptive pills. From these positive attitudes, one would have thought that the use of modern contraceptive methods would have increased if true respondents had realised that modern contraception was safer to practice than causing abortion. Despite having stated that causing an

abortion is risky, there is low usage of modern contraception among respondents. The low usage rate could be attributed to some sociocultural practices, such as using concoctions (salt water solution, lime, and potash to douche immediately after sex) and husbands' and in-laws' disapproval of modern contraceptive methods, which could lead to low usage. (Ajayi et al., 2016). Dissimilar to this observed finding, Al-Musa et al. (2019) revealed that aside from other social factors such as age and education, women with a history of abortions were more likely not to use modern contraceptives (a negative attitude) to prevent unplanned pregnancies. These respondents indirectly use abortion as a proxy for modern contraception.

Further, 65% of postpartum women agreed to the statement asking if they would have sexual intercourse even if no modern contraceptive methods were available to prevent pregnancy. Cultural customs demand that women be sexually available to their husbands whenever they need to, without questioning or refusing to avoid domestic violence (Madiba & Ngwenya, 2017). For example, Imo et al. (2022) revealed that due to some reasons such as victimisation, having regular partners, and winning and sustaining a husband's love and trust, women engage in sexual intercourse when there are no protections in Nigeria. A high proportion of the postpartum women disagreed that traditional beliefs (i.e., use of charms, rings, waistbands, drinking herbal soup, and having incisions with herbs prevent unplanned pregnancy) regarding sexual relations prevented them from using modern contraception. One would have expected that with such positive attitudinal behaviour, the usage rate of modern contraceptives after delivery would have been high. This low use of modern methods could probably be linked to

patriarchal societal practices where men are seen as powerful and the heads of decision-making in the family. These sociocultural practices lead to gender inequality, which negatively affects the reproductive health of postpartum women. However, Kyilleh et al. (2018) revealed that traditional beliefs and practices prevent women from using modern contraception. Though both studies were conducted in Ghana, the variation in findings could be because of geographical differences. The work of Kyilleh et al. (2018) was carried out in the West Gonja district of the Northern region, where culturally, women are not involved in decision-making in the family. However, compared to this current study conducted within the Bono region, women can contribute to community, household, or family decisions, including reproductive health issues (Dery et al., 2021; Darteh et al., 2014).

Perceived barriers, as one of the constructs under the health belief model, are explained as the degree to which an individual's negative aspects of activity serve as barriers, causing avoidance. Perceived barriers could imply that respondents with negative attitudes towards contraception would not use the methods of modern contraceptives (Hall, 2012). Again, Dona et al. (2018) revealed that women with negative attitudes towards modern contraception have a low usage rate. The current findings do not support other studies regarding postpartum women's positive attitudes. However, their positive attitude did not reflect the increased usage of modern contraceptive methods at the time of the study.

Research Question Three: What is the Influence of Maternal Healthcare Services Obtained at the Hospital by Immediate Postpartum Women in Sunyani Municipal Area of the Bono Region on Modern Contraceptives Use after Delivery?

This research question was analysed to ascertain whether maternal healthcare services received by immediate postpartum women influence modern contraceptive methods used after delivery. A chi-square test analysis was done to assess whether there is a relationship between maternal healthcare services and modern contraceptive use after delivery, and the results are presented in Table 7.

The results showed that all 903 postpartum women, representing 100%, received antenatal care service during pregnancy. However, when asked whether counselling on modern family planning methods was given at the antenatal clinic, 32% (n= 292) of the postpartum women confirmed receiving some information on modern family planning methods. In comparison, 68% (n= 611) still need to receive information on the methods. The results revealed a significant relationship between receiving antenatal counselling on modern family planning methods and modern methods after delivery, $\chi 2$ (1, 903) = 23.340, P= 0.000. The finding implies that antenatal counselling in modern family planning methods contributes to using the methods. Concerning postnatal counselling on family planning methods, 26% (n= 231) of respondents received some information, while 74% (n= 672) did not. There is a statistically significant association between receiving postnatal counselling on modern family planning and modern contraceptive methods after delivery $\chi 2$ (1, 903) = 14.012, P= 0.000.

In total, 58% (n= 523) of respondents received information on modern family planning methods through counselling during their ANC and PNC visits. However, only 30% (n= 157) of these respondents had information on the side effects of some modern family planning methods. Other results also showed a statistically significant association between education on possible side effects and the usage of modern contraceptive methods after delivery, $\chi 2$ (1, 903) = 88.471, P= 0.000.

For most postpartum women, 98% (n= 882) delivered at the hospital, while 2% (n= 21) delivered at home. However, there is no statistically significant association between the place of delivery and the usage of modern contraceptive methods after delivery, $\chi 2$ (1, 903) = 1.409, P= .494.

Maternal health services remained an essential platform in counselling on modern family planning methods for most women in their reproductive years. The present study found that all postpartum women (100%) attended and received antenatal care (ANC) services during their last pregnancies. The finding is consistent with findings reported by other studies (e.g., Adofo, 2014; Coomson & Manu, 2019; Zimmerman et al., 2019), which suggested that almost all the respondents attended ANC during their last pregnancies (98%, 95%, and 84%, respectively). Also, Dixit et al. (2017) found that ANC attendance was high (81%) in India. By inference, respondents know that attending ANC would help in early detection and prompt, appropriate treatment of any anomalies or complications that sometimes come with pregnancy to save the lives of the expectant mother and the unborn baby (WHO, 2016).

Table 7: Chi-square Test of Association between Provision of Maternal Healthcare Services and Current Modern Contraceptive Use after Delivery

	Current modern contraceptive usage n (%)				
Variables	Yes	No	Total	$\chi 2$	*P*-value
Antenatal care visit					
Yes	52(5.8)	851(94.2)	903(100)	.063	.802
No	0(0)	0(0)	0(0.0)		
Total	52(5.8)	851(94.2)	903(100)		
Antenatal counselling on family planning					
Yes	32(11)	260(89)	292(32.3)	23.340	.000*
No	20(3.3)	591(96.7)	611(67.7)		
Total	52(5.8)	851(94.2)	903(100)		
Place of delivery					
Health Facility	52(5.9)	830(94.1)	882(97.7)	1.409	.494
Home	0(0)	21(100)	21(2.3)		
Total	52(5.8)	851(94.2)	903(100)		
Postnatal counselling on family planning					
Yes	40(17.3)	191(82.7)	231(25.6)	14.012	.000*
No	12(1.8)	660(98..2)	672(74.4)		
Total	52(5.8)	851(94.2)	903(100)		
Did you receive education on possible side effects of modern contraceptive methods					
Yes	44(28)	113(72)	157(30)	88.471	.000*
No	8(2.2)	358(97.8)	366(70)		
Total	52(9.9)	471(90.1)	523(100)		

Source: Field Survey (2021) $P<0.05$*

Additionally, attending ANC promotes and maintains women's good physical and mental health throughout pregnancy, labour, and puerperium (WHO, 2016).

The report on hospital delivery was high (98%) among postpartum women during their last delivery. The higher delivery at the hospital could be because establishing a good interpersonal relationship between clients and their healthcare providers usually leads to developing mutual respect, access to accurate information, and client trust in the quality and delivery of care

(Madula et al., 2018; Chichirez & Purcărea, 2018). This present finding aligns with findings from other studies (Kumbeni et al., 2021; Dzomeku et al., 2021; Coomson & Manu, 2019), which revealed that there was a more significant percentage of delivering babies at health institutions when compared with home deliveries. The similarity of the findings could be that the cited studies were conducted in the same country (Ghana) using similar contextual and sample characteristics. The free maternal delivery policy instituted by the government of Ghana could also help explain the current observation. Comparatively, reports from previous studies from other countries showed that the proportion of home deliveries of babies was higher than those carried out at health facilities (Dagnew, 2020; Tessema et al., 2018; Mengesha et al., 2015; Akinlo et al., 2014). The noted differences are that expectant mothers can employ skilled healthcare providers in other countries to deliver the delivery in their homes (Joseph et al., 2016). Other reasons could be attributed to the geographical locations of these expectant mothers. In contrast, those in rural areas find it difficult due to accessibility (e.g., transportation to the health centres), proximity, and limited availability of health facilities (Tanou et al., 2021). In addition, expectant mothers want to deliver in a responsive and loving environment where they will be supported and respected. Others prefer traditional birth attendants to skilled birth attendants (Atukunda et al., 2020).

Though all the postpartum women attended and received ANC and PNC services, only 32% and 26% of these women received counselling on family planning, respectively. This reported low rate of family planning counselling is reflected in a low user rate of modern contraceptive methods after delivery. Postpartum women under study might have reported late to the

health facilities for ANC and PNC services when health education had already been given. Some women also intentionally skip these sessions to avoid the perceived longer waiting time or period at the health facilities. It is also possible that healthcare workers tried to reduce the quality of contact time with clients because of the outbreak of the COVID-19 pandemic and the fear of contracting the disease (Puri et al., 2021). The family planning counselling sections responsible for the maternal healthcare services at these health facilities were not organising educational sessions well because of limited staff and scarce logistical support and, thus, required the needed attention. The present study finding corroborates with previous studies done in Northwest Ethiopia and India, where it was found that with all postpartum women who attended and received ANC and PNC services during their last pregnancies, only 22.7% and 12% of these women, respectively, These women were counselled about postpartum family planning at least once during their four ANC and PNC visits (Tafere et al., 2018; Achyut et al., 2016). A similar study by Zimmerman et al. (2019) also revealed that a higher proportion of women attended and received maternal healthcare at ANC and PNC clinics. Meanwhile, only 34.7% of the women received counselling in ANC, 9.8% received it in PNC only, and 12.5% received counselling about family planning methods at ANC and PNC visits. In addition, a report from Western Kenya showed that most (99.6%) of mothers attended the ANC during their last pregnancies, with only 15% receiving counselling on modern family planning methods that could be used after delivery. However, postnatal attendance was low (31.7%) but recorded a higher counselling rate of 72.6%

(Owuor et al., 2018), which contradicts this study finding where all the postpartum women attended PNC visits with a counselling rate of 26%.

Additionally, the present study finding contradicted previous studies in Tanzania and the Eastern region of Ghana, where most women (94% and 94.5%, respectively) obtained antenatal care services when pregnant, with 62.3% and 71.4% receiving counselling on postpartum family planning methods, respectively (Massenga et al., 2021; Adofo, 2014). Possible explanations for the differences in the counselling rate are that the healthcare workers in the previous studies have recognised that timely provision of family planning counselling during ANC and PNC periods may influence clients' decision-making about their own reproductive health. Also, it influences women's preference for modern contraception after delivery, which may lead to modern methods to prevent unplanned pregnancies (Klu, 2019; Achwoka et al., 2017).

Postpartum family planning counselling is an opportunity for the couple to make a plan for obtaining and using the modern postpartum family planning method (HIP, 2017). The present study found that most respondents who received family planning counselling at either ANC visits, PNC visits, or both visits are not currently using modern contraceptive methods after delivery. The low usage rate of modern contraception after delivery could be the perceived barrier, for example, by the health belief model that guided the study. One of the health belief model components suggests that modern contraceptive utilisation after delivery is based on dealing with or removing perceived barriers. The perceived barriers refer to an individual's assessment of the obstacles to behavioural change (Urich, 2017). The perceived barriers to

taking action include sociocultural influences such as religion and husbands' or partners' prohibitions towards using modern family planning methods. These sociocultural beliefs may act as barriers to using modern postpartum contraception, even though the women might have gone through several well-organised family planning counselling sessions while receiving maternal healthcare from health workers (Mulatu et al., 2020). Another reason could be that most postpartum women may think that as long as they are breastfeeding their babies, they are safe and protected from unplanned pregnancy until they stop breastfeeding (Dieterich et al., 2013).

The current finding did not support previous studies, which revealed that most women who received family planning counselling at ANC or PNC were using modern contraceptives after delivery (Amour et al., 2021; Zapata et al., 2015; Dulal, 2015). Again, the present finding is not in line with a report that indicated that women found to be attending and receiving any of the maternal health services were more likely to use modern contraceptive methods than respondents who never received any of the three maternal healthcare services (Dona et al., 2018; Kafle et al., 2017; & Do et al., 2013). The observed differences in modern contraceptive usage after delivery could be that healthcare providers may have increased the quality, intensity, and consistency of family planning counselling sessions for the respondents. Consistent provision of family planning counselling might have led to the desire to use and actual use of modern postpartum contraception by respondents (Klu, 2019; Do et al., 2013).

The study findings further showed that receiving family planning counselling at ANC and/or PNC visits is significantly associated with current

modern contraceptive use. However, this did not reflect the usage rate of modern postpartum contraception. This significant relationship is consistent with findings reported in other studies where family planning counselling at ANC and PNC visits was significantly associated with postpartum contraception. In addition, the selection of modern contraceptive methods during ANC visits was also significantly associated with postpartum contraception (Ajayi et al., 2018; Achyut et al., 2016; Adofo, 2014). However, the overall finding did not reflect an increase in modern contraceptive methods after delivery. The similarities in the findings could be that the studies used the same cross-sectional research design, the respondents were postpartum women, and the studies measured the prevalence of modern postpartum contraception.

The proportion of postpartum women who received health education on possible side effects and what they are likely to experience when using modern contraceptive methods was 30%. The finding also showed that receiving health education on the possible side effects of using modern contraceptive methods was significantly associated with current modern contraceptive usage. The finding implies that when quality health education or family planning counselling sessions are held for women addressing the side effects of modern methods, it will positively affect the usage level of modern contraception after delivery. With the provision of quality family planning education using a job aid tool such as "NORMAL," women would be helped to unearth accurate information about modern contraceptive methods, correct malformations, and dispel all frightening misconceptions about the use of modern methods (Schrumpf et al., 2020). This approach would probably influence women's decisions to use modern methods to prevent most

unplanned pregnancies with abortion-related problems. Consistent with other studies, comprehensive health education and accurate information on side effects given to women increased and enabled the continuity of modern contraceptive method usage after delivery (Schrumpf et al., 2020; Rominski et al., 2017; Dehlendorf et al., 2014). The similarities in the findings could be due to cues to action, which is one of the components of the health belief model. A cue or trigger to action is necessary for prompting engagement in health-promoting behaviours. According to Rosenstock (1974), the health belief model posited that the use of modern postpartum contraception is based on cues or triggers, which could be internal (physiological characteristics) or external (events or information from close others, the media, and healthcare workers). Internal cues, such as postpartum women remembering previous pregnancy and delivery experiences, significantly influence the decision-making to use modern postpartum contraception. External cues, such as respondents receiving family planning counselling and information on possible side effects of modern contraception from healthcare workers, friends, family members, and electronic and print media, can also influence respondents to use modern methods of contraception after delivery. Therefore, cues or triggers to action could increase the use of modern postpartum contraception (Hall, 2012).

Similar to other research, no significant relationship existed between the place of delivery and current modern contraceptive usage. For instance, Akinlo et al. (2014) showed that the place of delivery did not influence modern contraceptive methods after delivery. Regardless of where women deliver, there are potential sociocultural barriers (having more children as an

economic value to the family) and misconceptions (having crippled babies or babies with abnormal heads) that may prevent them from using modern contraceptives, hence the lower usage rate (Silumbwe et al., 2018; Elmusharaf et al., 2017). Other studies showed a significant association between the place of delivery and postpartum contraception (Dagnew et al., 2020; Tessema et al., 2018; Achyut et al., 2016; Shabareen et al., 2015). It is possible that postpartum women in the other studies received more health-educational information on modern methods of contraception and were encouraged to choose and initiate their utilisation before being discharged from the health facilities (Cleland et al., 2015). It is also likely that, after delivery, the postpartum women in the current study were discharged from the hospital too early. Consequently, healthcare providers could not get time to render enough family planning counselling sessions, which led to the reported low usage rate of modern contraception. Healthcare personnel would require enough time to conduct counselling sessions using a more client-centred care approach to promote the increased use of modern contraceptives.

Also, ANC visits were not significantly associated with modern contraceptive usage after delivery. This finding highlights the need to empower these postpartum women by giving them more and continuous health education on the concept of family planning practices and helping them make informed decisions about using modern methods.

Research Question Four: What is the Difference in the Use of Modern Contraceptives after Delivery between Urban and Rural Immediate Postpartum Women in Sunyani Municipal Area of the Bono Region?

This research question assessed modern contraceptive usage among postpartum women from different locations within Sunyani Municipal Area.

A chi-square test table was prepared using the location of the respondents as the independent variable and current modern contraceptive use after delivery as the dependent variable. Table 8 presents the location of the respondents by the current modern contraceptive usage.

The results showed that 59% (n= 530) of postpartum women were from Sunyani East and 41% (n= 373) from Sunyani West. Among respondents from Sunyani East, only 6% (n= 34) and 5% (n= 18) from Sunyani West were currently using a modern contraceptive method. The results also indicated no statistically significant difference between the locations of the respondents and the use of modern contraceptives after delivery, $\chi 2$ (1, 903) = 0.7, P = .41.

Table 8: Differences between the Geographical Location of Postpartum Women and Current Modern Contraceptives Usage

	Current Modern Contraceptive Usage n (%)				
Location	Yes	No	Total	$\chi 2$	*P*-value
Sunyani East (Urban)	34(6.4)	496(93.6)	530(58.7)	0.7	0.41
Sunyani West (Rural)	18(4.8)	355(95.2)	373(41.3)		
Total	52(5.8)	851(94.2)	903(100)		

$P < 0.05$

Source: Field Survey (2021)

The prevalence of modern contraceptive utilisation in urban-rural areas is an essential tool to assess the overall usage rate of the methods among women of reproductive age, regardless of the distance from their residence to a nearby health facility. The study showed slight differences between the use of modern contraceptive methods among postpartum women in urban (6%) and rural (5%) areas. Presumably, rural dwellers need not travel far to urban

centres to access family planning services because some villages now have community-based health planning and services (CHPS) compounds for these modern family planning services. It is also possible that outreach programmes organised by family and community healthcare providers to visit the rural settlers and provide services periodically have reduced the maternal health service access disparity that hitherto existed between urban and rural settlements within the region (Aviisah et al., 2018; Wang & Mallick, 2019; Shiferaw et al., 2017; Eliason et al., 2014).

The current findings show that urban areas have a contraception rate of 6.4% compared with rural areas contraception rate of 4.8%. Though this finding supports previous studies by Ross (2021) and Yarger et al. (2017), which reported that women living in urban areas tend to use modern contraceptive methods more (27% and 38%, respectively) when compared with those living in rural areas (18% and 31%, respectively), there is a vast difference. However, the observed user rate of modern contraceptive methods across all the studies for rural and urban areas was low (less than 50%). Other studies reported a similar finding, which suggested that the prevalence of modern contraceptive method utilisation after delivery was higher among women living in urban areas when compared with those living in rural areas (Islam et al., 2020; Seran et al., 2020; Mahande et al., 2020; Lasong et al., 2020; & Ba et al., 2019). From the perspective of the health belief model, modifying variables (e.g., individual characteristics, including demographic, psychosocial, and structural factors) can indirectly affect women's perceptions towards the use of modern contraceptive methods after delivery (Urich, 2017). Demographical factors such as geographical or residential location, religion,

age, education, and occupation could significantly impact the decision-making process of postpartum women to use modern contraception. For example, Ameyaw et al. (2017) reported that the likelihood of women without religious affiliation using modern contraceptives was higher than that of those with religious affiliation.

Additionally, psychosocial factors such as social class, peers, and reference group pressure may influence the utilisation of modern contraception after delivery. Structural factors such as knowing modern contraceptive methods, ever-use of modern methods prior to the last pregnancy, and continuous supply of all available methods of modern contraceptives at various health facilities and pharmacies could also determine the usage of modern methods by postpartum women. Using the assumption of the KAP theory, women put up behaviour after acquiring knowledge and attitude, serving as a driving force to change behaviour. With little knowledge of modern contraception in the immediate postpartum period, women would not have a favourable attitude towards using modern contraceptive methods. Hence the low level of modern contraception in urban and rural areas (Wani et al., 2019).

Contrary to the study, a report revealed that using modern contraceptive methods was more common among rural dwellers than those in urban areas. Rural residents accounted for 67%, 64%, and 56% in 2003, 2008, and 2014, respectively (Aviisah et al., 2018). Observing reasons for the differences could be that though fewer health facilities are usually found in rural areas, having and offering a wide range of modern methods of contraception might have increased women's usage level of the modern

methods. The availability and accessibility of all modern postpartum contraceptive methods would help increase their usage after delivery (Chilinda et al., 2020). Another possible reason could be that providing quality family planning services with respect and dignity to women in rural areas by healthcare providers might have led to increased use of modern contraception among them (Wang & Mallick, 2018).

Consistent with other studies by Starr et al. (2015), geographical locations were not significantly associated with modern contraceptive methods after delivery $\chi 2$ (1, 903) = 0.7, P= 0.41. This finding suggests that the residential locations of the respondents have little or no influence on the use of modern contraception. Similarities could be that no matter the location of the health facilities, if respondents do not get a wide range of family planning methods to select from, it would lead to deprivation of the needs of the respondents: modern family planning services (Chilinda et al., 2020).

Research Question Five: Which Socio-demographic Variables Predict the Use of Modern Contraceptive Methods among Immediate Postpartum Women in the Sunyani Municipal Area of the Bono Region?

This research question identified the main socio-demographic determinants of the use of modern contraceptive methods among postpartum women. Chi-square tests and binary logistic regression tests were prepared using the respondent's socio-demographic characteristics (i.e., age, education, working status, religion, marital status, parity, number of live children, desire for more children, and sex preference) as the independent predictor variables and modern contraceptive usage after birth as the outcome variable (dependent variable). Refer to Appendix H for the results of the chi-square test table.

A binary logistic regression model was used to predict modern contraceptive usage among postpartum women after delivery. The following variables were used in the binary logistic model because they were significantly associated with age, education, parity, number of live children, desire to have more children, and sex preference. Table 9 showed that the overall binary logistic regression model significantly predicted modern contraceptive usage among postpartum women (-2LogL = 917.279, $\chi 2$ = 123.726, *p*= 0.000) with a Nagelkerke R^2 of 0.187. The result of the R square implied that the predictors explained 18.7% of the variance in modern contraception usage among women in the immediate postpartum period.

The data in Table 9 showed a statistically significant association between the use of modern contraception after delivery and the maternal age groups of 26–30 years and 31–35 years, respectively. Again, the values of the odds ratio showed that postpartum women across these age categories (i.e., 26–30 years and 31–35 years) were four and two times more likely to use modern contraceptive methods after delivery compared to their counterparts in age 14–19 years (OR = 4.079, 95% CI = 1.940–8.577, *p*= 0.000; OR = 2.411, 95% CI = 1.037–5.605, p= 0.041), respectively.

Concerning the educational level of the postpartum women, there was a statistically significant association between respondents who had attained a tertiary level of education and modern contraceptive use after delivery. However, these postpartum women were 27% less likely to use modern contraception after delivery (OR = 0.274, 95% CI = 0.118–0.637, *p*= 0.003). None of the other subgroup variables under education showed a statistically significant association, as indicated by the p-values. Again, the results

revealed that though respondents with the SHS educational level were not found to be statistically significant, they were 1.07 times more likely to use modern contraceptive methods after delivery compared to those with no education (OR = 1.074, 95% CI = 0.485–2.379, *p*= 0.860).

Regarding parity, there was no observed trend associated with modern contraceptive use after delivery. None of the subgroup variables under parity showed any statistically significant association. Nevertheless, the result also showed that multiparous postpartum mothers were more likely to use modern contraceptives after delivery than those in the primiparous group (OR = 1.027, 95% CI = 0.511–2.064, *p*= 0.941). The result further revealed that respondents in the grand multiparous group were less likely to use modern contraceptive methods after delivery compared to those in the primiparous group (OR = 0.846, 95% CI = 0.376–1.905, *p*= 0.687).

The number of live children could be one of the critical determinants of modern contraceptive use after delivery. Postpartum women with live children of three (OR = 4.394, 95% CI = 1.939-9.954, *p*= 0.000), four (OR = 3.730, 95% CI = 1.512-9.204, *p*= 0.004), five (OR = 4.366, 95% CI = 1.529-12.473, *p*= 0.006), and greater than five (OR = 7.586, 95% CI = 2.136-26.937, *p*= 0.002) were significantly associated with the use of modern contraceptive methods after delivery. However, postpartum women with two live children were not significantly associated with the use of modern contraceptives, although they were found to be 2.1 times more likely to use modern contraceptive methods after delivery compared to those with one live child (OR = 2.087, 95% CI = 0.991–4.392, *p*= 0.053).

Concerning the desire for more children and modern contraceptive use after delivery, the result indicated that the desire for more children was not significantly associated with the use of modern contraceptives after delivery (OR = 0.843, 95% CI = 0.527–1.349, *p*= 0.477). Postpartum women who desire more children were found to be less likely to use modern methods after delivery than those who do not want more children.

Regarding sex preference, the results showed that there was no significant association between sexual preference and the use of modern contraceptive methods after delivery. Postpartum women with particular sex preferences were 1.1 (OR = 1.095, 95% CI = 0.790–1.519, *p*= 0.585) times more likely to use modern contraceptive methods after delivery than those with no sex preference.

One of the demographic factors that influenced postpartum women's use of modern methods of contraceptives after delivery was age, with reference to only those in age brackets (26–30 and 31–35 years). The findings showed that only postpartum women in these age groups were significantly associated with modern contraceptive use after delivery. Besides that, women in all age groups were more likely to use modern methods of contraception after delivery. The study finding supports several other studies by Ahinkorah et al. (2021); Harris et al. (2021); Beson et al. (2018); and Jalang'o et al. (2017), where it was found that a higher proportion of women using modern contraceptive methods after delivery were younger than older ones. Usage levels decrease among women in the age group of 41–49 years.

Table 9: Determinants of Modern Contraceptive Methods Use after Delivery

Demographic characteristics	Beta coef.	Std. Err	*P*-value	Odds ratio	95% C.I. for Odds ratio	
					Lower	Upper
Age group						
14-19 (ref)	0.000			1.000		
20-25	.548	.359	.127	1.731	.855	3.501
26-30	1.406	.379	.000*	4.079	1.940	8.577
31-35	.880	.430	.041*	2.411	1.037	5.605
36-40	.537	.514	.296	1.711	.625	4.684
41^{+}	.180	.784	.819	1.197	.258	5.559
Education						
No education (ref)	0.000			1.000		
Primary	-.272	.412	.509	.762	.339	1.709
JHS	-.333	.382	.383	.717	.339	1.515
SHS	.071	.406	.860	1.074	.485	2.379
Tertiary	-1.295	.431	.003*	.274	.118	.637
Parity						
Primiparous (ref)	0.000			1.000		
Multiparous	.026	.356	.941	1.027	.511	2.064
Grand multiparous	-.167	.414	.687	.846	.376	1.905
Number of live children						
1 (ref)	0.000			1.000		
2	.736	.380	.053	2.087	.991	4.392
3	1.480	.417	.000*	4.394	1.939	9.954
4	1.316	.461	.004*	3.730	1.512	9.204
5	1.474	.536	.006*	4.366	1.529	12.473
>5	2.026	.647	.002*	7.586	2.136	26.937
Desire for more children						
No (ref)	0.000			1.000		
Yes	-.171	.240	.477	.843	.527	1.349
Sex Preference						
No (ref)	0.000			1.000		
Yes	.091	.240	.585	1.095	.790	1.519
Constant	-.331	.542	.541	.718		

-2 Log likelihood = 917.279, R Square = 0.187, (ref) = Reference, $p < 0.05$

Generally, women in their prime ages are highly sexually active and fertile, making them vulnerable to unplanned pregnancies with associated health problems that must be prevented (Atiglo & Biney, 2018). This might

have led these women to use modern contraceptive methods after delivery. Another reason could be that women of older ages may have reduced sexual activities or are in their menopausal period, resulting in their low utilisation of modern methods of contraceptives (Ahinkorah et al., 2021; Beson et al., 2018). Contrary to the study findings, Anguzu et al. (2018) revealed that respondents in the age groups 25–31 years and 35–45 years were less likely to use modern postpartum contraceptive methods than those aged 15–24 years. The variations in the findings could be that females between the ages of 15 and 24 might still be in school and want to prevent unplanned pregnancies, hence using modern contraception.

Educational level was identified as statistically significant for postpartum women, compared with those at the tertiary level. The finding is in line with other studies (sub-Saharan Africa, Ahinkorah et al. [2021]; South Africa, Hlongwa et al. [2021]; & Zambia, Lasong et al. [2020]), which reported that tertiary level of education was significantly associated with modern contraceptive use. It is documented that an individual will engage in a health-promoting behaviour (e.g., use modern contraception) if that person believes that a particular action will decrease the risk or susceptibility (getting unplanned or mistimed pregnancies with their accompanying consequences) to health problems. The person is likely to engage in that behaviour (Ulrich, 2017). This may have led to the use of modern contraceptives among them.

The finding is inconsistent with existing studies such as Ahinkorah et al. (2021), Alo et al. (2020), and Islam et al. (2016), which found that women with higher educational levels were more likely to use modern methods of contraceptives when compared with those with no formal education. The

differences could be that the women do not want to interrupt their education or have received highly-paid employment opportunities recently; therefore, they would use modern contraceptives to suspend unplanned pregnancies (Ameyaw et al., 2017). A higher degree of cultural and religious opposition could be a reason for respondents with higher educational levels in this study not using modern contraception. Another reason postpartum women with higher education do not use modern contraceptives is that they overly rely on breastfeeding (lactational amenorrhoea) as a preventive measure against unplanned pregnancy (Peltzer & Pengpid, 2015). Hence the low usage of modern methods.

Consistent with previous studies by Abdulai et al. (2020), Ba et al. (2019), and Rutaremwa et al. (2015), this study also found that postpartum women with SHS educational level were more likely to use modern contraceptive methods after delivery compared to those with no formal education. Respondents at this educational level better understand the benefits of regulating their fertility, hence the need to use modern contraception after delivery. Alternatively, these postpartum women may have chosen suitable modern contraceptive methods to use after being aware of the possible side effects of the modern methods. In contrast to this study, Eliason et al. (2018) found that the likelihood of postpartum women completing SHS using modern contraceptive methods after delivery decreases compared to those with no formal education (OR = 0.77, 95% CI = 0.43-1.35, p= 0.361). Perhaps erroneous community-based information from friends and relatives about the prolonged adverse effects (development of breast and cervical cancers) of modern contraceptive methods may have contributed to the variations. This

misinformation might have scared these respondents, leading to the low utilisation of modern contraceptive methods.

Several findings by Mandiwa et al. (2018), Eliason et al. (2018), and Emiru et al. (2020) found that when women attain primary education, their likelihood of using any of the methods of contraception increases as compared to those who did not receive any formal education. These findings were inconsistent with the current finding that postpartum women with primary educational levels were not likely to use modern contraception. The variation could probably be attributed to differences in understanding how modern contraception works to prevent unplanned pregnancy. In contrast, in the current study, respondents may perceive modern contraception as unsafe, while women from other studies might have seen the safety and benefits of using modern methods.

The study findings revealed a significant association between the use of modern contraceptive methods after delivery and postpartum women with three or more live children. Consistent with previous scholarly works (e.g., Abdel-Salam et al., 2020; Owuor et al., 2018; Rutaremwa et al., 2015), postpartum women having two or more living children were found to be more likely to use modern contraceptives after delivery compared to those with a single live child. A possible explanation could be that women may be motivated to use modern contraceptive methods because they have performed their roles in a society where the premium is placed on women to give birth. Giving birth to at least one live child erased societal gossip and the embarrassment of bareness (Cohen et al., 2020; Ameyaw et al., 2017). However, Mahande et al. (2020) did not support the current finding, as

postpartum women with three or more children were not likely to use contraceptives after delivery in Tanzania. The differences in the findings from Mahande et al.'s study could be attributed to respondents' sociocultural factors, where the number of living children is seen as family wealth. Also, respondents living in societies with higher parity, where giving birth to more children is more common, show a high sense of belongingness (Elmusharaf et al., 2017). Such cultural norms, therefore, lead to low modern contraceptive utilisation. Additionally, the finding revealed no significant association between women who have two live children and the use of modern contraception after delivery.

The parity of women in the postpartum period was not significantly associated with modern contraceptives, as reported in the study. However, the finding also showed that the likelihood of multiparous women using modern contraceptive methods after delivery is high. This finding corroborates previous studies, which revealed that the odds of modern contraceptive use after delivery increased among multiparous women compared to primiparous women (de Vargas Nunes Coll et al., 2019; Behrman et al., 2018). The similarities could be that the respondents were aware of the health risk involving the baby and mother when one gets pregnant so early and close to the last delivery. Another reason could be that they see themselves as free from societal stigmatisation and husband violence, as they have been able to deliver at least one or more children as some cultural customs demand (de Vargas Nunes Coll et al., 2019).

Similar to other studies (e.g., Owuor et al., 2018), the study found that postpartum women in the grand multiparous group were less likely to use

modern contraceptive methods after delivery than primiparous women. Some sociocultural practices where not only motherhood but the number of children women can deliver influence how these women are accorded the necessary respect by their in-laws, family, and other members of society may account for the present finding (Abdulai et al., 2020; Kabagenyi et al., 2016). Comparatively, Anguzu et al. (2018) and Alo et al. (2020) reported that grand multiparous women were more likely to use modern contraceptives after delivery. Plausible explanations for the differences could be that positive beliefs regarding the reversibility of the hormonal effects of modern contraceptive methods on ovulation and menstruation might encourage them to use the modern methods (Alo et al., 2020; Anguzu et al., 2018). Alternatively, it could be possible that respondents appreciate their vulnerability to unplanned pregnancies and the risk of dying from pregnancy complications when one is in the grand multiparous group (Abdelmageed et al., 2022; Mgaya et al., 2013). This line of argument is congruent with the health belief model assertion that an individual's behaviour is shaped by how the person perceives a given health problem as severe. When the person perceives the situation, that will make the person more likely to engage in health-related behaviours to prevent the health problem from occurring, hence the use of modern methods to control high fertility.

Furthermore, there was no significant association between postpartum women who desire to have more children and the use of modern contraceptive methods after delivery. This non-significant association could explain why postpartum women who want more children are less likely to use modern contraceptive methods than those who do not desire more children. This

finding is consistent with previous studies (Ahinkorah, 2020; Alo et al., 2020; Anguzu et al., 2018; Owuor et al., 2018). Possible reasons for the similarities might be that there has been either total neglect or relaxation of fertility campaign efforts by policymakers within the health sector and non-governmental organisations (Asekun-Olarinmoye et al., 2013). Another possible explanation could be that cultural norms and customs demand large families to enhance status within the extended family, and the community at large could explain the findings, which tend to decrease the use of modern contraceptives after delivery (Elmusharaf et al., 2017).

Similar to other studies (e.g., Dey et al., 2020; Eliason et al., 2018; Rai et al., 2014), this study found no significant association between sex preference and the use of modern contraceptive methods after delivery. However, postpartum women who desire particular sexes were found to be more likely to use modern contraceptive methods than those who do not have sex preferences. Similarities could be attributed to women's perceived benefits of using modern contraceptives, as they allow time for birth spacing. Culturally, women are now given the mandate to decide on their reproductive health, empowering them to use modern methods of contraception (Tesfa et al., 2022).

Public Health Implications

The findings of this study have some public health implications for maternal and child health and the health system as a whole. Knowledge of modern contraceptive methods that could be used in the immediate postpartum period was low. Studies have shown that low knowledge of modern contraceptive methods and their possible side effects have been associated

with low utilisation of modern contraceptives after delivery (Ochako et al., 2015; Tolossa et al., 2013). Though there was a positive attitude towards the use of modern contraceptives, their low utilisation after delivery could lead to high rates of unplanned pregnancies, unsafe abortion, preterm deliveries, stillbirths, sexually transmitted infections, maternal morbidities, and mortalities (Appiah et al., 2020; Bankole et al., 2015). The country's low utilisation of modern contraception has been associated with a high fertility rate, leading to rapid or increased population growth. High population growth amid limited infrastructure has been associated with problems such as increased urbanisation, crimes, poverty, overcrowding in schools and healthcare facilities, and an outbreak of communicable diseases (Ndayizigye et al., 2017). The Sustainable Development Goal (SDG) 3 seeks to ensure healthy lives and promote well-being for all ages by 2030 (UNDP Ghana, 2017). Ensuring healthy lives and well-being means everyone receives the necessary services and is protected from health threats and financial hardship. One apparent intervention to curb rapid population growth and protect people from health threats and financial hardship is to encourage the use of modern postpartum contraceptives.

On the provision of maternal health services (ANC, hospital delivery, and PNC), it was observed that there was massive attendance. However, most women who obtained maternal healthcare services did not receive family planning counselling, an essential component of maternal healthcare services. Research studies have shown that providing high-quality family planning counselling tends to increase the use of modern contraceptives, reducing unwanted pregnancies and short-interval pregnancies with their associated

health consequences. Such health consequences include lower birth weight, infant morbidity and mortality, and bleeding issues affecting mothers, leading to death (Dey et al., 2021; Dehingia et al., 2020). SDGs 3.1 and 3.2 seek to reduce maternal and infant mortality rates. These goals can be achieved when there is an increased investment and attention to promoting family planning services, especially for people in their immediate postpartum period who need modern contraceptives but are not using them. Again, an improvement in family planning counselling, easy accessibility, affordability, and availability of a wide range of modern contraceptive methods would increase the use of these methods to promote health.

The following socio-demographic characteristics identified in the study as significant predictors of the use of modern contraception among women in their immediate postpartum period are age, education, parity, number of live children, desire for more children, and sex preference. The findings imply that these factors could be considered an essential strategy for promoting modern contraceptive use in the immediate postpartum period.

Summary

This chapter addressed how data was analysed and processed during the study. The findings were presented in detail and discussed using primary data relative to previous studies reviewed in the literature. Research question one assessed knowledge on which appropriate modern contraceptive methods could be used in the immediate postpartum period. The knowledge level among the 903 postpartum women in the immediate postpartum period was low. Most postpartum women were unaware of the availability and timing of modern contraceptive methods intended only for breastfeeding women. This

finding suggests that detailed and accurate information on modern postpartum contraceptive methods is needed to help address the unmet needs of these women at the community level. Overall, the prevalence of modern contraceptive usage among postpartum women at the time of the study was low, a figure below the national target. Of these women found using modern contraceptive methods after delivery, only a few had a high level of knowledge of the modern methods. The finding implies that there could be a high risk of unplanned pregnancies, short inter-pregnancy intervals, and unsafe abortions with adverse effects on the health of the mother and the child. With the implementation of multiple intervention programmes for family planning, unplanned pregnancies occurring due to the high level of unmet needs can be reduced through comprehensive individual health education on modern postpartum contraception and men's involvement in family planning counselling.

Positive attitudes towards using modern contraceptive methods after delivery among postpartum women show a healthy sign. However, there is still a gap between having a positive attitude and its translation into actual practice. Also, it was found that most postpartum women did not receive any form of counselling on family planning methods when they attended and obtained ANC, delivery, and PNC services. The findings imply that most mothers did not receive comprehensive information on family planning at the ANC, labour ward, and PNC departments, making these women vulnerable to short inter-pregnancy intervals and maternal exhaustion because the mother cannot recover between pregnancies and births, which can lead to maternal death. Providing quality family planning counselling sessions alongside other

maternal healthcare services will motivate the women and promote modern contraceptive usage after delivery.

The assessment was done on modern contraceptive use among postpartum women from urban and rural areas. The finding indicated that the geographical locations of postpartum women are not significantly associated with modern contraceptive use. The current modern contraceptive usage level among urban residents is slightly higher than that in rural areas. Generally, the overall use of modern contraceptives in rural and urban areas was low. The findings imply that practicing modern contraception in urban and rural areas was poor. Poor modern contraception practices could lead to large family sizes, poverty, malnutrition, and a lack of access to quality healthcare services.

Concerning socio-demographic characteristics, the study found the likelihood of mothers in the age groups 26–30 and 31–35, those who have attained SHS educational level, having live children, multiparous women, and those with sex preference using modern contraception after delivery was high. The finding implies that young women between the ages of 26 and 35, women with SHS educational levels, the number of live children, and sex preference could bring about a favourable change in modern contraceptive use.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study aimed to investigate modern contraceptive use among immediate postpartum women in the Sunyani Municipal area in the Bono Region of Ghana. Specifically, the study assessed the knowledge level of postpartum women on modern contraceptive methods and how it influences the usage of modern contraceptives; determined the influence of attitude and maternal healthcare services obtained at the hospital by postpartum women on the utilisation of modern contraceptives; determined the difference in the use of modern contraceptive methods between urban and rural postpartum women; and identified which of the socio-demographic variables predict modern contraceptive usage among women in the immediate postpartum period. This chapter focuses on the research summary, significant findings of the study, conclusions drawn based on the study findings, and recommendations of the study made based on the conclusions, references, and appendices.

Summary

Several studies have revealed that despite the effort made by the government and non-governmental organisations to improve the use of modern family planning methods, the adoption rate of modern contraception services in Ghana remains insignificant. The Family Planning (FP) 2030 report shows a slight increase in modern contraceptive methods usage, from 20.4% in 2015 to 22.8% in 2022. However, this trend is accompanied by fluctuations. In 2016, the usage increased to 20.6%, then declined to 20.4% in 2017. The Ghana FP2030 Report of 2022 also shows an increase, from 20.7% in 2018 to 22.8% in 2022. These figures confirm that contraceptive usage is

still considered low. Following the low usage of contraceptives, more than a third (37%) of all pregnancies in Ghana are unintended, out of which 23% are mistimed and 14% are unwanted, leading to abortion. Modern contraceptives are used very imperatively to reduce maternal and neonatal deaths. The use of modern contraceptive methods helps space birth, thereby preventing shorter pregnancy intervals that can lead to maternal and child morbidities and mortalities when unattended to. Additionally, using modern contraceptive methods can reduce the incidence of sexually transmitted infections and avoid unintended pregnancies that might otherwise end in abortions.

Many studies were conducted (Eliason et al., 2018; Jalango et al., 2017; Adofo, 2014) on contraceptive use among postpartum women. However, less is known about modern contraceptive methods among postpartum women in the immediate postpartum period (from the day of delivery to 8 weeks). Therefore, the study focused on modern contraceptive usage among postpartum women in the immediate postpartum period in Sunyani Municipal Areas of the Bono Region of Ghana.

The research design for the study was quantitative, using a descriptive cross-sectional approach. The study was conducted across eight selected healthcare facilities in the Sunyani Municipal Area: Bono Regional Hospital, Seventh Day Adventist Hospital, Sunyani Municipal Hospital, Owusu Memorial Hospital, Chiraa Clinic, Kwatire Clinic, Fiapre Health Centre, and Nsoatre Clinic. The target population included all postpartum women aged 14–49 who delivered within eight weeks, regardless of their educational level, occupation, parity, marital status, or religion.

A sample of 903 postpartum women was selected from an estimated total population of 1,157 using a multistage sampling procedure. Data was collected using a questionnaire to elicit information from the sampled postpartum women. A 60-item questionnaire with mainly closed-ended items and only five open-ended questions was utilised. The questions covered five sub-sections: socio-demographic characteristics of participants, knowledge level on modern contraceptive methods, current modern contraceptive use and ever use, provision of maternal healthcare services and its influence on modern contraception, and postpartum women's attitude towards modern contraception and their utilisation. The collected data were analysed based on the specific research objectives using SPSS software version 22.0. Frequency and Pearson Chi-square statistic tests were used to provide analyses for research questions one, two, three, and four, while a binary logistic regression was used to test research question five.

Key Findings

The following findings were identified based on the results of the study:

1. Postpartum mothers' knowledge of modern contraceptive methods was low in the immediate postpartum period. The findings revealed that 75% of the respondents had a low knowledge of modern contraceptive methods in terms of which methods were appropriate to use in the postpartum period. Modern contraceptive use after delivery at the time of the survey was only 6%. Out of these postpartum women found using modern contraception, 14% have high knowledge of modern methods, 46% have moderate knowledge, and 40% have low knowledge.

Furthermore, male condoms and injectables were respondents' most commonly known modern contraception methods.

2. The study also revealed a generally positive attitude of postpartum women towards using modern contraceptive methods, especially concerning recognising the importance of using modern methods immediately after delivery and improving maternal and child health.
3. All respondents attended and received antenatal care services during their last pregnancies; however, only 32% received counselling on modern family planning methods. Concerning postnatal counselling on modern family planning methods, 26% of the postpartum women received the counselling.
4. The use of modern contraceptive methods after delivery was significantly associated with family planning counselling at ANC and PNC clinics and health education on the possible side effects of using modern contraceptive methods.
5. There were slight differences between the use of modern contraceptive methods after delivery among postpartum women in urban areas (6%) and those in rural areas (5%).
6. There was a significant association between postpartum women who attained a tertiary level of education and the use of modern contraceptives after delivery. However, the odds ratio revealed that the likelihood of these postpartum women using modern contraceptive methods after delivery was less than that of those without formal education. Also, postpartum women with a senior high secondary level of education were

1.1 times more likely to use modern contraceptives after delivery than those without formal education.

7. Postpartum women who are multiparous were more likely to use modern contraceptives after delivery than those who are primiparous.
8. Grand multiparous women were less likely to use modern contraceptives after delivery than primiparous women.
9. There was a significant association between having five or more living children and modern contraceptive use.
10. Postpartum women who desire more children were less likely to use modern contraceptives after delivery than those without a desire for more children.
11. Postpartum women with a preference for a particular sex were 1.1 times more likely to use modern contraceptive methods after delivery than those with no particular sexual preference.

Conclusions

Based on the study's findings, the following conclusions were drawn:

1. The study revealed that the knowledge level of appropriate modern contraceptive methods used in the immediate postpartum period was generally low, with male condoms and injectables being the most commonly known compared to other invasive methods among respondents. The finding could be that male condoms and injectables are readily available and accessible, so the health education is geared towards them, leaving the other methods. Again, healthcare providers are skilled at performing injectable procedures compared to other invasive ones, so they hardly provide education on other invasive procedures. The implication is

that postpartum women who do not like the use of male condoms and injectables would not have access to any other modern contraceptive methods, leading to low utilisation of the modern methods. Again, the overall prevalence of modern contraceptive methods among postpartum women in the immediate postpartum period was low. The low usage could be due to low levels of health education programmes targeting modern contraceptives in the immediate postpartum period. This outcome suggests that there could be a high rate of unplanned pregnancies with associated preterm term deliveries, stillbirths, and unsafe abortions with a high rate of maternal morbidity and mortality.

2. Although there was a positive attitude towards utilising modern methods of contraception after delivery among postpartum women, this positive attitude did not translate into actual use. The non-translation into the actual use of modern contraception in the immediate postpartum period could be that postpartum women are not getting in-depth information on which modern contraceptive methods can be used in the immediate postpartum period and have wrong perceptions and myths about the effect of modern contraceptives on breast milk production and possibly physical abuse from their husbands or partners. This finding implies that a positive attitude alone is insufficient to use modern contraception in the immediate postpartum period.
3. Generally, the use of modern contraceptives after delivery was significantly associated with (i) the provision of health education on the possible side-effects of using these modern methods; (ii) counselling on family planning methods at both the ANC and PNC; (iii) postpartum

women within the ages of 26–30 and 31–35 years; (iv) those with a tertiary level of education; and (v) those having five or more living children. Health education on possible side-effects of using these modern methods; b) family planning counselling; c) postpartum women within the ages of 26–35 years; d) women with a tertiary level of education; and e) those having five or more living children promote the use of modern contraception in the immediate postpartum period.

Recommendations

Based on the conclusions of this study and to improve reproductive health issues among women and the use of modern contraceptives in the immediate postpartum period, some recommendations are made. These are:

1. There should be a policy that would promote the acquisition of higher knowledge among women about modern postpartum contraception. Mothercraft School should be introduced into the core services provided to pregnant women in all healthcare institutions in the Bono Region of Ghana to ensure higher knowledge. Mothercraft School should be encouraged and implemented as it provides enough time for teachings on important reproductive health-related issues and counselling on modern contraceptive methods that can be used in the immediate postpartum period. Introducing the Mothercraft School would lessen the workload for midwives and public health nurses during ANC and PNC clinic days. Additionally, it cuts down on the time that expectant and postpartum women waste. Again, the government, through the Ministry of Health (MOH) and the Ghana Health Service (GHS), should periodically provide comprehensive specialist training in reproductive health, paying much

attention to the practical aspect of the training. The practical component should form 70% of the whole training programme. Proper practical training is needed to enhance the skills of health professionals in areas where invasive procedures are needed when providing modern family planning methods to clients.

2. Based on the positive attitude of postpartum women towards using modern contraceptive methods after delivery, midwives, public health nurses, and trained family planning nurses should continually provide outreach programmes on modern family planning. Again, the nurses, in conjunction with the information service department, provide information on modern family planning in all the communities where the survey took place. This is to give out the correct information on modern family planning by showing video clips on the proper use of modern contraceptive methods and also to dispel misconceptions about women developing cancers of the breast and ovaries as an adverse effect of prolonged use of hormonal contraception. This intervention may lead to the use of modern contraceptive methods among women.
3. The Ministry of Health and Ghana Health Service should invest in providing comprehensive health talks on the possible side effects of modern contraceptive methods that are used immediately after giving birth. Appropriate measures should be put in place to promote the use of modern contraception.
4. Health facilities should provide private, individualised family planning counselling sessions to ensure privacy by trained staff.

5. Postpartum women with a tertiary level of education and postpartum women with five or more living children could be targeted to use modern contraception in the immediate postpartum period by the Ministry of Health and Ghana Health Service.

Recommendations for Further Studies

The following recommendations are made for further studies:

1. Further studies should involve all health institutions providing maternal health care services in the study community to enable generalisation.
2. The study should involve all women in their immediate and extended postpartum periods to enable clear patterns of modern contraceptive use after delivery.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATION STUDIES

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION

QUESTIONNAIRE ON MODERN CONTRACEPTIVE USE AMONG IMMEDIATE POSTPARTUM WOMEN IN SUNYANI MUNICIPAL AREA OF BONO REGION

Serial Number……

This questionnaire aims to gather your views about modern contraceptive use among immediate postpartum women in Sunyani Municipal Area of Bono Region, Ghana. Please answer the questions honestly. Your responses are confidential and for academic purposes only. Thank you in advance for your cooperation.

Section A: Demographic Data (Please Tick (√) Once the Appropriate Answer in the Box).

1. How old are you?

   14 - 19 years [ ], 20- 25 years [ ], 26 - 30 years [ ], 31 - 35years [ ], 36 - 40 years [ ], 41 – 45 years [ ], 46 – 49 years [ ]

2. What is your level of formal education?

   Primary [ ], JHS [ ], SHS [ ], Tertiary [ ], None [ ]

3. Current working status

   Yes [ ], No [ ]

4. What is your monthly income level?

Less than GH¢500 [ ], GH¢ 500 - 1000 [ ], Between GH¢ 1000 - 2000 [ ], Above GH¢ 2000

5. What is your religious denomination?

Catholic [ ], Protestant [ ], Muslim [ ], Pentecostal [ ], Other (Specify)…

6. Ethnicity

Akan[ ], Ewe [ ], Ga/Adangbe [ ], Dagomba [ ], Other (Specify)……

7. What is your current marital status?

Single [ ], Married [ ], Separated [ ], Divorced [ ], Widow [ ]

8. If the answer to question 7 is married, how long have you been married?

Less than 2 years [ ], Between 2 to 5 years [ ], More than 5 years [ ]

9. Geographical location

Sunyani east [ ], Sunyani west [ ]

10. How many times have you been pregnant?

Once [ ], Twice [ ], Thrice [ ], Four [ ], Five [ ], More than five [ ]

11. How many live births have you had?

One [ ], Two [ ], Three [ ], Four [ ], Five [ ], More than five [ ]

12. How many children do you have at home at this time?

One [ ], Two [ ], Three [ ], Four [ ], Five [ ], More five [ ]

13. Do you desire to have more children?

Yes [ ], No [ ]

14. Can sex preference of children you want influence your parity?

Yes [ ], No [ ]

Section B: Level of Knowledge on Modern Contraceptive Methods

For the following questions, I would like to ask about modern contraceptives; the period, and the various methods or ways that a postpartum woman can use to delay or avoid a pregnancy. Please tick (√) once the appropriate answer in the box. Each question is rated accordingly; No - (0), Yes - (1)

No	From Numbers 15 to 23, Use the Questions Below to Respond "Have you Heard about the Following Methods of Modern Contraceptive available for Postpartum Women?"	Yes	No
15.	Female Sterilization. PROBE: Postpartum women can have an operation to avoid having any more children.		
16.	Male Sterilization. PROBE: Men can have an operation to avoid having any more children.		
17.	IUD. PROBE: Postpartum women can have a loop or coil placed inside the womb by a doctor or a nurse after delivery which can prevent pregnancy for one or more years.		
18.	Injectables. PROBE: Postpartum women can have an injection containing progesterone only by a health provider that stops them from becoming pregnant for one or more months.		

19.	Implants. PROBE: Postpartum women can have one or more small rods containing progesterone only placed in their upper arm by a doctor or nurse which can prevent pregnancy for one or more years.		
20.	Pill. PROBE: Postpartum women can take a pill containing progesterone every day to avoid becoming pregnant.		
21.	Male Condom. PROBE: Men can put a rubber sheath on their penis before sexual intercourse.		
22.	Female Condom. PROBE: Postpartum women can place a sheath in their vagina before sexual intercourse.		
23.	Emergency Contraception. PROBE: As an emergency measure, within three to five days after having unprotected sexual intercourse, postpartum women can take special pills to prevent pregnancy.		
24.	Can breastfeeding prevent unintended pregnancy?		
25.	Can a postpartum woman breastfeed her baby and use modern contraception at the same time?		
26.	Can a postpartum woman who uses modern contraceptive while breastfeeding her baby, have problem with breast		

	milk production and the taste?		
27.	Can a postpartum woman starts the use of modern contraceptives immediately after delivery?		
28.	Can postpartum women can start using the following modern contraceptives; intrauterine device, sterilisation and implant immediately after delivery?		
29.	Can the following modern contraceptives; Emergency contraceptives, combined pills and injectable, implants, intrauterine device, condom, sterilisation be used by non-breastfeeding postpartum women immediately after delivery?		

Section C: Current Modern Contraception Use and Ever Use

I would like to ask information about your modern contraceptive use and how you are protecting yourself from unintended pregnancy. Please tick (√) once the appropriate answer in the box. Each question is rated accordingly; Yes (1), No (0)

No	Questions	Yes	No
30.	Have you ever used modern contraceptive ?		
31.	Currently, are you using any modern contraceptive method?		
32.	Can the family's finances influence your decision about the use of postpartum modern contraceptive?		

33. If currently you are using modern contraceptive method, what influenced your decision? Limit family size [ ], Prevention of unintended pregnancy [ ], Child spacing [ ], Spousal approval [ ], Motivation from health providers [ ], Accessibility [ ], Other (Specify)…….
34. If currently using modern contraceptive method, which form of modern contraceptives are you using?. Condom [ ], Progestogen-only pill [ ], IUD [ ], Implant [ ], Sterilisation [ ], Other (Specify)……...……
35. If currently you are not using any modern contraceptive methods, what influenced your decision? Husband disapproval [ ], Religious reasons [ ], Fear of side-effect of the methods [ ], Inaccessibility [ ], Wants more children [ ], Sex preference [ ], Health providers' attitude [ ], Misconceptions [ ], Cost [ ], Infrequent sex [ ], Breastfeeding [ ] Other (Specify)…….
36. If you have ever experienced any problems with the use of modern contraceptive, what problems did you face? Prolonged vaginal bleeding [ ], Headaches [ ], Backaches [ ], Lower abdominal pains/cramps [ ], Dizziness [ ] Excessive weight gains, [ ], Absence of menstruation [ ], Others (specify)…….
37. Would you have used modern contraceptives if you had not experienced any problems with it? Yes [ ], No [ ]

Section D: Maternal Health Care Services, Please Tick (√) the Appropriate Answer in the Box.

38. Where did you deliver your baby? Health facility [ ], At home [ ]
39. Did you attend antenatal clinic during pregnancy? Yes [ ], No [ ]"

40. If the response to question 39 is Yes, how many times did you attend antenatal clinic? None [ ], One [ ], Two [ ], Three [ ], Four [ ], Other (Specify).....

41. If the response to question 39 is No, what is your reason?

    Attitude of health professionals [ ], Transportation [ ], financial constraints [ ], Cultural belief [ ], Religious belief [ ], Other (Specify)…….....

42. If the response to question 39 is Yes, did you receive any information on modern contraceptive methods? Yes [ ], No [ ]

43. If Yes to question 42, which methods did the providers talk about

    Female sterilization [ ], Male sterilization [ ], Injectable [ ], Pills [ ], Male condom [ ], Female condom [ ], Implant [ ], IUD [ ], Emergency Contraception [ ], Other (Specify)……

44. Did you choose any modern family planning method during antenatal clinic counselling? Yes [ ], No [ ]

45. If Yes to question 44, are you currently using the method you chose at the ANC counselling? Yes [ ], No [ ]

46. Did you receive counselling on family planning after delivery?

    Yes [ ], No [ ]

47. During your postnatal visit, did you receive any information on modern contraceptive methods which can be used to delay or prevent pregnancy?

    Yes [ ], No [ ]

48. If Yes to question 47, Which methods did the providers talk about at the postnatal clinic? Female sterilization [ ], Male sterilization [ ], Injectable [

], Pills [ ], Male condom [ ], Female condom [ ], Implant [ ], IUD [ ], Emergency contraception [ ], Others (Specify)……

49. Did the family planning service providers tell you about the side effects or problems you may encounter with the various methods? Yes [ ], No [ ]

Section E: Attitudes toward Contraception

"As you have had baby from day 1 to 8 weeks, we would like to know how you are protecting yourself from unintended pregnancy and your feelings about contraception. Please tick (√) the appropriate answer in the box. Each statement is rated accordingly; Strongly agree -1, Agree -2, Disagree -3, Strongly disagree -4"

No	Statements	1	2	3	4
50.	Promiscuous women use modern contraceptives to prevents unintended pregnancy.				
51.	I think the use of modern contraceptives cannot improve the health of the mother and the child.				
52.	I think it is very important to use modern contraceptives immediately after delivery until you decided to have another child.				
53.	Easy access and use of modern contraceptives will increase incidence of infidelity.				
54.	The whole idea of the use of modern contraception is embarrassing to me.				
55.	It is totally wrong to use modern contraceptives.				
56.	The use of modern contraception to prevent				

	pregnancy is religiously seen as sinful than having abortion.				
57.	Having one abortion is safer than daily intake of packs of contraceptive pills.				
58.	The use of modern contraceptives by women lead to fertility.				
59.	Sometimes when a modern contraceptive method is not available, I believe you just have to take a chance and hope for good luck to avoid pregnancy.				
60.	Traditional beliefs regarding sexual relations prohibit me from using modern contraceptives.				

APPENDIX B

INFORMED CONSENT FORM

Project Title: Modern Contraceptive Use Among Immediate Postpartum Women in Sunyani Municipal Area of Bono Region, Ghana.

Investigator: Vincentia Sarfo-Brobbey

Qualification: PhD student

Address: Department of Health, Physical Education and Recreation, College of Education Studies, University of Cape Coast, Cape Coast.

Telephone: 0209364008/0244674604, E-mail: sarfobrobbeyv@gmail.com; sarfobrobbeyv@yahoo.com

General Information about the Research

The purpose of this study is to investigate modern contraceptive usage among postpartum women in the immediate postpartum period. It is well known that modern contraception is a means of controlling birth, preventing unintended pregnancy, and causing abortion. Abortion, a frequent consequence of unplanned pregnancy, has been reported to have serious long-term health effects on postpartum women's lives. You will be asked questions about your background, knowledge of modern postpartum contraceptive methods, postpartum contraceptive use, the services you received during the antenatal, labour, and postnatal visits, and your attitude towards contraceptive usage in the immediate postpartum period. The survey will take about 30 minutes. Your decision not to participate in the study or to withdraw will not be shared with anyone, and it will not affect you or the services to which you are

entitled. Your answers will be kept confidential, and your name will not appear anywhere. If you have any questions, you are free to ask.

Possible Risks and Discomforts

There is no physical, social and psychological risk of harm if you take part in this study.

Possible Benefits

Being part of the study may not help you but may teach you about modern postpartum contraception and how when used correctly will protect you from unintended pregnancy. By conducting this study, it will serve as foundational data to support development of relevant family planning policy decisions and educational programs for postpartum women in the immediate postpartum period.

Confidentiality

The answered questionnaires will be kept confidential. The research team will protect your identity. To ensure this, a code instead of your name will be used to identify anything written on the questionnaires and all information obtained will be coded and kept in a cabinet under lock and key.

Compensation

There will be no compensation for the study participants.

Voluntary Participation and Right to Leave the Research

Participation in this study is voluntary. if you do not like to take part, it is okay. You will not lose anything or services that you are entitled to because you refuse to be part of the study. If you join the study and later decide you no longer want to be in the study, you can stop just by telling me. It will not affect the care that you receive. It is estimated that about 903 participants

would be involved in the study over a period of about four months. You would be one of the participants in the study.

Contact Person for Additional Information

If you need any information, please contact the following:

Dr Elvis Hagan (Principal supervisor), Department of Health, Physical Education and Recreation, University of Cape Coast. Telephone number: 0248323725.

Dr Thomas Hormenu (Supervisor), Department of Health, Physical Education and Recreation, University of Cape Coast. Telephone number: 0244213465.

Your Rights as a Participant

This research has been reviewed and approved by the Institutional Review Board (IRB) at the University of Cape Coast and Health Directorate of Ghana Health Service, Bono Region. You may contact them for any further information and inquiries.

Volunteer Agreement

The above document describing the benefits, risks and procedures for the research title (Modern Contraceptive Use Among Immediate Postpartum Women in Sunyani Municipal Area, of Bono Region) has been read and explained to me. I have been given the opportunity to ask any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Date…… Signature or mark of volunteer……...……

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date……... Signature of Witness…….....

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date…… Signature of Person Who Obtained Consent…….

APPENDIX C

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
INSTITUTIONAL REVIEW BOARD SECRETARIAT
TEL: 0558093143 / 0508878309/ 0244207814
E-MAIL: irb@ucc.edu.gh
C/O Directorate of Research, Innovation and Consultancy

OUR REF: UCC/IRB/A/2016/773
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0009096

5TH AUGUST, 2020

Ms. Vincentia Sarfo-Brobbey
Department of Health, Physical Education and Recreation
University of Cape Coast

Dear Ms. Sarfo-Brobbey,

ETHICAL CLEARANCE – ID (UCCIRB/CES/2020/43)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted **Provisional Approval** for the implementation of your research protocol **Modern Contraceptive Use among Postpartum Women in Sunyani Municipal Area of Bono Region, Ghana.** This approval is valid from 5th August, 2020 to 4th August, 2021. You may apply for a renewal subject to submission of all the required documents that will be prescribed by the UCCIRB.

Please note that any modification to the project must be submitted to the UCCIRB for review and approval before its implementation. You are required to submit periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Samuel Asiedu Owusu, PhD
UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST

APPENDIX D

INTRODUCTORY LETTERS

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF HEALTH, PHYSICAL EDUCATION & RECREATION

TELEPHONE: +233 - (0)206610931 / (0)543021384 / (0)268392819

TELEX: 2552, UCC, GH.

EMAIL: hper@ucc.edu.gh

Cables & Telegrams:
UNIVERSITY, CAPE COAST

Our Ref: **ET/HTP/17/0004**

27th April, 2020

TO WHOM IT MAY CONCERN

INTRODUCTORY LETTER:
VINCENTIA SARFO-BROBBEY (ET/HTP/17/0004)

The above named person is a student of the Department of Health, Physical Education and Recreation of the University of Cape Coast. She is pursuing a Doctor of Philosophy degree in Health Promotion. In partial fulfilment of the requirements for the programme, she is conducting a research for her thesis titled "**Modern Contraceptive Use Among Postpartum Women in Sunyani Municipal Area of Bono Region, Ghana**".

We would be most grateful if the necessary assistance she is requesting for is offered to her.

We count on your usual co-operation.

Thank you.

Yours faithfully,

Dr. Daniel Apaak
(Head of Department)
Tel.: +233 (0)208587866
Email: daniel.apaak@ucc.edu.gh

OUR CORE VALUES
1. PEOPLE-CENTRED
2. PROFESSIONALISM
3. TEAM WORK
4. INNOVATION
5. DISCIPLINE
6. INTEGRITY

My Ref. No. GHS/BA/MHD/HR
Your Ref. No.....

GHANA HEALTH SERVICE
MUNICIPAL HEALTH DIRECTORATE
P. O. BOX 311
SUNYANI

27th October, 2020

E- Mail Address:
mhdsunyanieast@yahoo.com

Tel: 0322497431

THE MEDICAL SUPERINTENDENT
MUNICIPAL HOSPITAL
SUNYANI

INTRODUCTORY LETTER.

I write to introduce to you Ms. Vincentia Sarfo –Brobbey from University of Cape Coast. She is pursuing a Doctor of Philosophy degree in Health Promotion.
She is conducting a research for her thesis titled ''Modern Contraceptive Use among Postpartum Women "A case study in Sunyani Municipal Area of Bono Region.

Kindly accord the student your usual courtesy and cooperation.

Thank you.

MR. KWAME AFFUL
ADMINISTRATIVE MANAGER
FOR: MUNICIPAL DIRECTOR OF HEALTH SERVICE
SUNYANI

Cc. Owusu Memorial Hospital
Abesim H/C
Family Planning Unit Sunyani Central

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF HEALTH, PHYSICAL EDUCATION & RECREATION

TELEX: 2552 UCC GH

Cables & Telegrams:
UNIVERSITY, CAPE COAST

Our Ref: ET/HTP/17/0004

27th April, 2020

GHANA HEALTH SERVICE
RECEIVED
25 JUN 2020
P.O. BOX 27
BIAREO HOSPITAL

TO WHOM IT MAY CONCERN

INTRODUCTORY LETTER:
VINCENTIA SARFO-BROBBEY (ET/HTP/17/0004)

The above named person is a student of the Department of Health, Physical Education and Recreation of the University of Cape Coast. She is pursuing a Doctor of Philosophy degree in Health Promotion. In partial fulfilment of the requirements for the programme, she is conducting a research for her thesis titled **"Modern Contraceptive Use Among Postpartum Women in Sunyani Municipal Area of Bono Region, Ghana"**.

We would be most grateful if the necessary assistance she is requesting for is offered to her.

We count on your usual co-operation.

Thank you.

Yours faithfully,

Dr. Daniel Apaak
(Head of Department)
Tel.: +233 (0)208587866
Email: daniel.apaak@ucc.edu.gh

Received
16-9-2020

30/6/2020

OUR CORE VALUES
PEOPLE-CENTRED
PROFESSIONALSM
TEAM WORK
INNOVATION
DISCIPLINE
INTEGRITY

My Ref. No.GHS /SW/G- 19
Your Ref. No.....

GHANA HEALTH SERVICE
MUNICIPAL HEALTH DIRECTORATE
P. O. BOX 311
SUNYANI WEST

30TH JUNE, 2020.

Tel: 0244783833/ 0509821980

LETTER OF INTRODUCTION
MS. VINCENTIA SARFO-BROBBEY
(ET/HTP/17/0004)

The above named Mistress has been granted permission to undertake her research work in the Sunyani West Municipality in partial fulfilment of the requirements for Doctorate Program.

With your compliment, kindly provide her the necessary data and or Information she will need from your facility. It should be noted however that, every data/information emanating from your facility will be treated confidential.

Counting on your usual cooperation and tremendous Assistance.

RICHARD KWASI HENNEH
MUNICIPAL DIRECTOR OF HEALTH SERVICE
SUNYANI WEST

HEALTH FACILITY INCHARGES

- Chiraa Polyclinic
- Fiapre Health Centre
- Dumasua Health Centre
- Nsoatre Health Centre
- Kwatire Polyclinic

APPENDIX E

Socio-demographic Characteristics of Respondents

Variables	Frequency	Percentage
Age group		
14-19	51	5.6
20-25	217	24.0
26-30	377	41.7
31-35	169	18.7
36-40	72	8.0
Level of formal education		
No education	64	7.1
Primary	126	14
JHS	356	39.4
SHS	230	25.5
Tertiary	127	14.1
Currently working		
Yes	800	88.6
No	103	11.4
Monthly income		
Zero income	103	11.4
Below 500	424	46.9
500-999	257	28.5
1,000-1,999	92	10.2
2,000-2,999	25	2.8
3,000 and above	2	0.2
Religion denomination		
Catholic	174	19.3
Protestant	252	27.9
Muslim	115	12.7
Pentecostal	344	38.1
Traditionalist	3	0.3
No religion	15	1.7
Ethnic group		
Akan	460	51.0
Ewe	68	7.5
Ga/Adangbe	43	4.8
Dagomba	60	6.6
Dagati	109	12.1
Frafra	69	7.6”

Kusasi	50	5.5
Wala	44	4.9
Marital status		
Single	43	4.8
Married/Living together	855	94.7
Separated	3	0.3
Widow	1	0.1
Divorced	1	0.1
Geographical location		
Sunyani East	530	58.7
Suyani West	373	41.3
Gravidity		
1-2	342	37.9
3-4	394	43.6
5-6	139	15.4
7-8	27	3.0
9-10	1	0.1
Parity		
1	178	19.7
2	293	32.4
3	252	27.9
4	106	11.7
5	44	4.9
6	26	2.9
7	3	0.3
8	1	0.1
Number of live children		
1	180	19.9
2	303	33.6
3	240	26.6
4	102	11.3
5	45	4.9
>5	33	3.7
Desire for more children		
Yes	681	75.4
No	222	24.6
If yes to desire to have more children, can sex preference influence parity?		
Yes	415	60.9
No	266	39.1

Source: Field Survey (2021)

APPENDIX F

Attitude of Postpartum Women towards the use of Modern Contraceptives

Statements	S A	A	D	S D
Promiscuous women use modern contraceptives to prevent unintended pregnancy.	28(3.1)	54(6.0)	427(47.3)	394(43.6)
I think the use of modern contraceptive cannot improve the health of the mother and the child.	55(6.1)	98(10.9)	569(63.0)	181(20.0)
I think it is very important to use modern contraceptives immediately after delivery until you decide to have another child.	157(17.4)	519(57.5)	146(16.2)	81(8.9)
Easy access and use of modern contraceptives will increase the incidence of infidelity.	41(4.5)	35(3.9)	449(49.7)	378(41.9)
The whole idea of the use of modern contraception is embarrassing to me.	102(11.3)	157(17.4)	517(57.3)	127(14.0)
It is totally wrong to use modern contraceptives.	97(10.7)	136(15.1)	566(62.7)	104(11.5)
The use of modern contraceptive to prevent pregnancy is religiously seen as sinful than having abortion.	91(10.1)	72(8.0)	613(67.9)	127(14.0)
Having one abortion is safer than daily intake of packs of contraceptive pills.	7(0.8)	11(1.2)	652(72.2)	233(25.8)
The use of modern contraceptives by women lead to fertility.	116(12.9)	41(4.5)	302(33.4)	444(49..2)
Sometimes when a modern contraceptive method is not available, I believe you just have to take a chance and hope for good luck to avoid pregnancy.	245(27.1)	344(38.1)	259(28.7)	55(6.1)

Traditional beliefs regarding sexual relations prohibit me from using modern contraceptives.	24(2.7)	31(3.4)	584(64.7)	264(29.2)

In the table SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

Source: Field Survey (2021)

APPENDIX G

Mean Scores of Postpartum Women Attitude towards the use of Modern Contraceptives after Delivery

Statements	Mean	Standard Deviation
Promiscuous women use modern contraceptives to prevent unintended pregnancy.	3.32	0.719
I think the use of modern contraceptive cannot improve the health of the mother and the child.	2.97	0.743
I think it is very important to use modern contraceptives immediately after delivery until you decide to have another child.	2.16	0.813
Easy access and use of modern contraceptives will increase the incidence of infidelity.	3.29	0.745
The whole idea of the use of modern contraception is embarrassing to me.	2.75	0.832
It is totally wrong to use modern contraceptives.	2.76	0.789
The use of modern contraceptive to prevent pregnancy is religiously seen as sinful than having abortion.	2.86	0.775
Having one abortion is safer than daily intake of packs of contraceptive pills.	3.23	0.497
The use of modern contraceptives by women lead to fertility.	3.19	1.008
Sometimes when a modern contraceptive method is not available, I believe you just have to take a chance and hope for good luck to avoid pregnancy.	2.14	0.886
Traditional beliefs regarding sexual relations prohibit me from using modern contraceptives.	3.21	0.618
Overall mean score	2.65	0.510

Source: Field Survey (2021)

APPENDIX H

Chi-square Test of Association between Socio-demographic Characteristics and Current Modern Contraceptives usage after Birth

	Current Modern Contraceptives usage after Birth n (%)				
Variables	Yes	No	Total	χ^2	*P*-value
Age group					
14-19	0(0)	51(100)	51(5.6)	35.676	0.001*
20-25	5(2.3)	212((97.7)	217(24)		
26-30	17(4.5)	360(95.5)	377(41.7)		
31-35	16(9.5)	153(90.5)	169(18.7)		
36-40	9(12.5)	63(87.5)	72(8.0)		
41+	5(29.4)	12(70.6)	17(2.0)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		
Education					
None	9(14.1)	55(85.9)	64(7.1)	11.241	0.024*
Primary	9(7.1)	117(92.9)	126(13.9)		
JHS	14(3.9)	342(96.1)	356(39.4)		
SHS	15(6.5)	215(93.5)	230(25.5)		
Tertiary	5(3.9)	122(96.1)	127(14.1)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		
Working status					
Employment	46(5.8)	754(94.2)	800(88.6)	0.229	0.632
Unemployment	6(5.8)	97(94.2)	103(11.4)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		
Religion					
Catholic	16(9.2)	158(90.8)	174(19.3)	9.802	0.081
Protestant	12(4.8)	240(95.2)	252(27.9)		
Muslim	1(0.9)	114(99.1)	115(12.7)		
Pentecostal	23(6.7)	321(93.3)	344(38.1)		
Traditionalist	0(0)	3(100)	3(0.3)		
No religion	0(0)	15(100)	15(1.7)		
Total	**52(5.8)**	**851(94.2)**	**903 (100)**		
Marital status					
Single	1(2.3)	42(97.7)	43(4.8)	1.247	0.536
Married/Living together	51(6.0)	804(94)	855(94.7)		
Formerly Married	0(0)	5(100)	5(0.5)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		

Parity					
Primiparous	2(1.1)	176(98.9)	178(19.7)	13.548	0.001*
Multiparous	40(6.1)	611(93.9)	651((72.1)		
Grand multiparous	10(13.5)	64(86.5)	74(8.2)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		
Number of live children					
1	3(1.7)	177(98.3)	180(19.9)	32.918	0.001*
2	11(3.6)	292(96.4)	303(33.6)		
3	14(5.8)	226(94.2)	240(26.6)		
4	14(13.7)	88(86.3)	102(11.3)		
5	5(11.1)	40(88.9)	45(4.9)		
>5	5(15.2)	28(84.8)	33(3.7)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		
Do you desire for more children					
Yes	21(3.1)	660(96.9)	681(75.4)	38.854	0.000*
No	31(14)	191(86)	222(24.6)		
Total	**52(5.8)**	**851(94.2)**	**903(100)**		
If yes to desire to have more children, can sex preference influence your parity?					
Yes	7(1.6)	422(98.4)	429(63)	9.895	0.001*
No	14(5.6)	238(94.4)	252(37)		
Total	**21(3.1)**	**660(96.9)**	**681(100)”**		

P-value< 0.05*

Source: Field Survey (2021)