

**EFFECTIVENESS OF TARGETED ANTENATAL FAMILY PLANNING
INFORMATION PROVISION ON EARLY POSTPARTUM FAMILY PLANNING
UPTAKE IN KISUMU COUNTY, KENYA**

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Nursing of Masinde Muliro University of Science and Technology**

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that they have read and hereby recommended for acceptance of Masinde Muliro university of Science and Technology a thesis entitled “**Effectiveness of Targeted Antenatal Family Planning Information Provision on Early Postpartum Family Planning Uptake in Kisumu County, Kenya.**”

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DEDICATION

I dedicate this work to my entire family: my dad Festo; my mum Sofia; my wife Everlyne; and my kids, Jewel, Jabali, Lee Roy, and Leo.

ABSTRACT

The need for early Postpartum Family Planning (PPFP) is often overlooked, resulting in missed opportunities to achieve inter-birth interval of at least three years to improve maternal, perinatal and neonatal outcomes. As such, the unmet need for early PPFP remains high, especially in West and Central Africa where it is estimated to be 75%. In Kenya, the unmet need for PPFP is 73%. The maternal and child health continuum presents an opportunity for PPFP interventions to be integrated, particularly through targeted information giving. Currently, there's no structured protocol for information delivery, and evidence on fertility intentions and optimal early PPFP strategies is insufficient or non-replicable. This study therefore examined the effectiveness of antenatal FP information provision on early PPFP uptake using a pragmatic randomized control trial in Kisumu guided by Theory of Planned Behaviour (TPB) to guarantee replicability. The study compared early PPFP uptake between control and intervention groups, assessed the effect of the intervention on individual attitude towards early PPFP uptake, evaluated the effect of the intervention on perceived social normative beliefs towards early PPFP uptake, measured the effect of the intervention on perceived individual control of early PPFP choice, analyzed the effect of the intervention on intentions for early PPFP and established the determinants of early PPFP uptake among the 246 study participants in Kisumu County after at least 6 months of intervention and 3 months of postpartum followup. Case Report Forms, client exit interview, and questionnaire were used to collect data which was analyzed using SPSS version 26. ANOVA with post hoc tests, Chi-square statistic, ordinal logistic regression analysis, and binary logistic regression analysis were the main statistical tests with $\alpha < 0.05$. There was a high PPFP uptake (85.8%), positive attitude (96.4%), positive normative beliefs (75.2%), perceived control (92.3%) and intention (96.3%) for early PPFP with a significantly higher early PPFP uptake within the intervention arm (90.9%) than the control arm (75.6%) (OR:3.2; 95% CI:1.5 to 6.7; $P < 0.0001$). Nurses' arm showed higher rates of early PPFP commencement (95.1%) as compared to control 75.6% OR=6.3 and community arms (86.6%) OR=3.0. Likewise, the intervention had a significant effect on; perceived social normative beliefs ($P=0.015$), perceived control of PPFP choice ($P < 0.0001$) and intention for early PPFP ($P < 0.0001$). The nurses' arm had a superior influence on these constructs compared to the control and community arms. The determinant of early PPFP uptake were; being health educated in pregnancy ($P=0.03$, OR:4.6), good intimate partner relationship ($P < 0.0001$, OR:2.3), setting a postnatal appointment for PPFP ($P=0.021$, OR:2.6), perceived normative belief about early PPFP ($P < 0.0001$, OR:3.6), perceived behavioural control of PPFP choice ($P < 0.0001$, OR:6.6), intention to use early PPFP ($P < 0.0001$, OR:3.3), high FP counselling turnaround time ($P=0.032$, OR:0.94) and being counselled in group ($P=0.002$, OR:0.28). The study demonstrated effectiveness of nurse led antenatal FP information provision on early PPFP uptake by enhancing; positive social normative beliefs on early PPFP, perceived individual control of early PPFP choice, and intention for early PPFP. The study recommends promotion of nurse led targeted antenatal FP counselling for early PPFP uptake, streamlining counselling processes to enhance quality and client satisfaction by; tailoring interventions to address comorbidity related attitudes and individual preferences, with

future research focusing on inclusive participant recruitment. The study presents a practical model for targeted antenatal FP information provision to foster early PPFp uptake.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
ANOVA	Analysis of Variance
BTL	Bilateral Tubal Ligation
BRAIDED	Benefits, Risks, Alternatives, Inquiries, Decisions, Explanations, and Documentation
CHP	Community Health Promoter
CPR	Contraceptive Prevalence Rate
CRF	Case Report Form
CU	Community Unit
DMS	Director of Medical Services
FP	Family Planning
GANC	Group Ante-Natal Care
GATHER	Greet, Ask, Tell, Help, Explain, Return/Refer
HC	Health Centre
HIV	Human Immuno-Deficiency Virus
IERC	Institutional Ethics and Research Committee
IUCD	Intrauterine Contraceptive Device
JOOTRH	Jaramogi Oginga Odinga Teaching and Referral Hospital
KDHS	Kenya Demographic Health Survey
KNBS	Kenya National Bureau of Statistics
LARC	Long-Acting Reversible Contraceptives
LAM	Lactational Amenorrhea
MCH	Maternal and Child Health
MMUST	Masinde Muliro University of Science and Technology
MOH	Ministry of Health
NACOSTI	National Commission for Science, Technology and Innovation
PACTR	Pan African Clinical Trials Registry
PNC	Postnatal Care
PPFP	Postpartum Family Planning
RCT	Randomized Control Trial
RH	Reproductive Health
RMNCH	Reproductive, Maternal, Neonatal and Child Health
SGS	School of Graduate Studies
SPSS	Statistical Package for Social Sciences

OPERATIONAL DEFINITION OF TERMS

Community arm: The part of the study where Community Health Promoters administered the intervention.

Control arm: Part of the study where routine antenatal care was being administered

Early Postpartum Family Planning (PPFP) Uptake - Using Family Planning within the first 3 months postpartum.

Early Postpartum Period- The period from childbirth to 3 months after birth.

Intention for PPFP – This was the client’s expressed readiness to use FP method of any kind during the postpartum period.

Intervention arms: A combination of the nurses’ and the community arm.

Nurses’ arm: The part of the study where the nurses administered the intervention.

Perceived PPFP Choice Control - client's beliefs that they have the power to make decisions and influence uptake of early Postpartum Family Planning.

Social Normative beliefs – These are client’s beliefs about the extent to which other people who are important to the client approve or disprove use of postpartum FP.

Targeted Antenatal Family Planning Information Provision - Specific Family Planning information that was given to antenatal mothers with the intention of influencing their intentions for family planning in the early postpartum period.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter provides a background of the study. It dwells background of the study, problem statement, objectives, research hypotheses, significance of the study, theoretical framework, conceptualization of the theoretical framework and significance of the model to the study.

1.2 Background of the Study

Spacing the interbirth interval by at least three years by use of effective postpartum contraceptive methods in less developed countries could prevent poor maternal, perinatal, and neonatal health outcomes, including stillbirth, prematurity, low birth weight, neonatal and maternal mortality (Ahmed *et al.*, 2015; Sridhar & Salcedo, 2017). Ignoring the contraceptive needs of postpartum women constitute missed opportunities in health service delivery to avert unplanned pregnancies and affording every woman and her family the health, social, and economic benefits of family planning (FP) (Aisha *et al.*, 2016). The UN population Division believes “that all couples and individuals have the basic right to determine freely and responsibly the number and spacing of their children and to have the information, education and means to do so” highlights the importance given to FP and timely birth spacing (United Nations Population Division, 2016). However, the unmet need for FP in the postpartum period remains unacceptably high and far exceeds the FP unmet need of other women (Sedgh *et al.*, 2016). Globally, approximately 44% of pregnancies are unintended. The unintended pregnancy rates have declined by 30% in developed regions, from 64 per 1000 Women of Reproductive Age

(WRA) in 1990s to 45 by 2018. In developing regions, the unintended pregnancy rate reduced by 16% in the same period to 65%. Decline in the unintended pregnancy rate in both regions coincided with increased uptake of FP (Bearak *et al.*, 2018). Interbirth intervals in 50% or more of pregnancies in lowincome countries are too short at less than 23 months (Moore *et al.*, 2015a). The proportion of postpartum women who no longer want children or want to postpone another child for at least two years but are not using a contraceptive method is still high. The unmet need soon after birth even reaches 75% for the West, and Central Africa region (Sedgh *et al.*, 2016). In Kenya, the situation of PPFP is not different from other lowincome countries. In a multicountry study which included Kenya, only 25% of women in Kenya had adopted PPFP by six months, and 35% at one year (Pasha *et al.*, 2015). Reproductive, Maternal, Neonatal and Child Health (RMNCH) continuum provides a great opportunity for PPFP interventions (Moore *et al.*, 2015a). Based on the RMNCH program strength in Kenya, Achyut *et al.*, (2016) recommended integration of PPFP information giving during ANC period to help in reversing the high unmet PPFP need in Kenya (Achyut *et al.*, 2016). However, Kisumu County, in its strategy for sexual and reproductive health 2019 to 2024 has overlooked postpartum FP as an intervention of high impact on maternal, newborn and infant outcomes. Such systemic errors point to the extent of the neglect of PPFP locally (County Government of Kisumu, 2019). Equally, the integration of FP information provision in the Antenatal Clinic (ANC) services is not deliberate and the practice is not consistent for every client attending ANC (KNBS, 2022a).

Many women understand the importance of early PPFP for health and pregnancy spacing. Research in North India and Mumbai highlights the positive influence of behaviour

change interventions, previous contraception use, and partner involvement in improving attitudes and uptake of PPFP (Mody *et al.*, 2014; Pal *et al.*, 2022). Studies in African countries like Uganda, Ghana, and Ethiopia suggest that understanding the contraceptive benefits of breastfeeding, prior knowledge of FP methods, partner support, and individual perceptions significantly affect attitudes towards PPFP (Coomson & Manu, 2019; Embafrash & Mekonnen, 2019; Sileo *et al.*, 2015). In Kenya, while some women recognize the benefits of early PPFP, challenges like inadequate postpartum care, lack of FP services, and missed counselling opportunities influence their attitudes (Jones *et al.*, 2020; Mutea *et al.*, 2022; Thiongo *et al.*, 2022). Strategies to enhance positive attitudes in Kenya encompass increased community awareness, partner involvement, improved maternal care satisfaction, and addressing misconceptions (Jalang'o *et al.*, 2017; Jones *et al.*, 2020; Silesh *et al.*, 2022). Despite the insights gained from these studies, there's a marked research gap regarding the impact of antenatal interventions, specifically comparing community-based vs. facility-based methods, on women's attitudes towards early PPFP. Filling this gap is crucial for shaping evidence-based strategies that strengthen positive attitudes towards early PPFP, leading to better maternal and child health outcomes.

Understanding social norms regarding early PPFP is vital, especially in low- and middle-income countries witnessing a growing demand for such services. Women in these nations often wish to start contraception soon after childbirth, but use of modern PPFP varies due to factors like education, residence, and wealth (Cleland *et al.*, 2015; Hounton *et al.*, 2015). Different countries, like the Dominican Republic, Nicaragua, and Ethiopia, showcase distinct trends and approaches to PPFP, indicating varying social normative

beliefs and the influence of government interventions (Cleland *et al.*, 2015; Hounton *et al.*, 2015). Social norms around PPFP are shaped by cultural, socio-economic, and age-related factors, with older women being more inclined towards its use (Taye *et al.*, 2019). However, there's a gap in understanding these social normative perceptions (Mekonnen *et al.*, 2021). A high unmet need for early PPFP remains, impacted by factors such as insufficient antepartum care and the reliance on traditional methods like breastfeeding in places like Sub-Saharan Africa (Pasha *et al.*, 2015; Rossier & Hellen, 2014). Tailored interventions that acknowledge socio-demographic differences and cultural norms are crucial (Sumit *et al.*, 2016). Despite the available data, there's still a lack of understanding of how antepartum counselling can influence social norms concerning early PPFP, especially in Kenya, necessitating further research on the subject.

The perceived control of early PPFP among women is influenced by several factors. Knowledge about contraceptives and the influence of partners and peers play a significant role (Mekonnen *et al.*, 2021; Sileo *et al.*, 2015). Healthcare providers can empower women during the antenatal care phase by providing comprehensive contraceptive information. Socio-cultural backgrounds, including social norms and peer experiences, also shape perceptions and decisions regarding PPFP. Empowering women and giving them decision-making autonomy is key. In resource-limited settings, decision-support tools, like mobile health contraceptive aids, can help women make informed choices (Dev, Woods, *et al.*, 2019; Roy *et al.*, 2021). In Kenya, mobile messaging services and community dialogues have shown effectiveness in enhancing PPFP uptake. Education has a marked influence on FP attitudes, self-efficacy, and often surpasses socio-cultural barriers (Bakibinga *et al.*, 2016; Jones *et al.*, 2020; Mutea *et al.*, 2022). While many

studies highlight personal agency, self-efficacy related barriers and cultural influences on PPFP perceptions, there is a shortage of interventional research to address these barriers and improve perceived control of early PPFP choice. The need for standardized measures to quantify women's perceived control and the establishment of early PPFP choices during antenatal care are vital areas that require further exploration. There is a pressing need for studies focusing on changing perceptions, establishing early PPFP choices, and analyzing the effectiveness of information provision and postnatal appointment setting on perceived control of early PPFP choice and bridge the gap between perceived control and actual use of early PPFP.

Understanding women's intentions towards early PPFP is crucial. International trends show varying intentions towards birth spacing and limiting. While regions like Eastern and Southern Asia have higher desires for birth spacing and limiting, Sub-Saharan Africa lags behind (Abraha *et al.*, 2018; Lori *et al.*, 2018; Sedgh *et al.*, 2016). A study across five low-income countries revealed disparities between the desire to delay pregnancies and actual contraceptive usage, particularly among young mothers (Pasha *et al.*, 2015). Determinants of intention for early PPFP vary. Some of the studies on this area have shown perceived norms, male partner support, and antenatal counselling as key predictors of intention for FP. In particular, male partner approval in Ethiopia and antenatal counselling in Tanzania have shown significant influence on intention for early PPFP (Gage *et al.*, 2021; Gebeyehu *et al.*, 2020). In countries like Ethiopia, Ghana, and Uganda, antenatal care visits, gender composition of living children, and early decision-making through interventions like appointment vouchers are pivotal for PPFP intentions (Abraha *et al.*, 2018; Atukunda *et al.*, 2019; Kofi *et al.*, 2018). In Kenya, societal and community

influences, education, and marital status play a major role in shaping postpartum contraceptive intentions (Ooko *et al.*, 2022). Despite these insights, there's a paucity of interventional research that actively addresses and influences women's antenatal intentions for early PPFP. The current study sought to determine the effect of antenatal counselling of mothers on intention for early PPFP in Kisumu County.

Determinants for early PPFP uptake are multifaceted and vary depending on the global, regional, and local context. Globally, the perception of pregnancy risks, benefits of contraception, and prior contraceptive experience influence decisions on PPFP (Dev, Kohler, *et al.*, 2019). Sociodemographic characteristics such as age, education, marital status, and socio-economic status play pivotal roles in countries like Ethiopia, with younger, more educated women in urban areas being more inclined towards PPFP (Abbasi *et al.*, 2020; Navodani *et al.*, 2017; Tilahun *et al.*, 2022). Cultural and religious norms, region-specific sociocultural disparities, and parity levels affect contraceptive use, while breastfeeding and misunderstandings about hormonal contraceptives impact uptake (Obwoya *et al.*, 2018; Sensoy *et al.*, 2018). Resumption of menses serves as a trigger for contraceptive initiation in several African countries, with some mothers mistakenly believing breastfeeding offers sufficient contraception (Elweshahi *et al.*, 2018; Keogh *et al.*, 2015; Mohammed *et al.*, 2016; Moore *et al.*, 2015a; Ndugwa *et al.*, 2011). counselling during antenatal and postnatal care, quality of the counselling provided, and the location of birth (health facility vs. home) also significantly affect PPFP choices. Access to proper information, healthcare services, and the role of healthcare workers in providing relevant advice and support are crucial (Abraha *et al.*, 2017; Mengesha *et al.*, 2015). In Kenya, socio-cultural beliefs, individual control perceptions, and male partner influences are

determinants of PPFP decisions (Kungu *et al.*, 2020). While there is a body of research on PPFP, specific determinants for early PPFP choice, especially influenced by sociocultural beliefs and individual control, remain under-researched in Kenya. Policymakers and healthcare providers could benefit from more focused, theory-based studies on these determinants to design effective FP strategies.

The Theory of Planned Behaviour (TPB), by Icek Ajzen, is a pivotal psychological model for understanding and predicting behaviours, especially in the health domain (Ajzen & Klobas, 2013). At its core, the TPB suggests that our intentions, which directly drive our actions, are molded by three key factors: our attitudes towards a behaviour, the social pressures we feel (known as subjective norms), and our beliefs about our own ability to perform the behaviour (perceived behavioural control) (Ajzen & Cote, 2008; Armitage & Conner, 2001; Cooke *et al.*, 2016; Russo *et al.*, 2015). A person might be more inclined to use contraception if they view it positively (attitudes), believe their close circle approves of it (subjective norms), and think it's easy to access and use (perceived behavioural control). Thus, intention to use early PPFP would be influenced by personal attitudes on early PPFP, the utilization of early PPFP among peers, and the belief in the ability to make choice of early PPFP methods (Boyko *et al.*, 2011; Conner, 2015; Johnson, 2017; Thapa *et al.*, 2019). Research has validated TPB's effectiveness in forecasting health behaviours. It's not just a theoretical framework; it provides practical tools to measure and analyze specific behaviours, making it a valuable resource for the current research. The theory is particularly potent when crafting interventions. By understanding and targeting the factors that influence intention, desired choices can be encouraged (Caplescu, 2014; Russo *et al.*,

2015). The TPB's versatility and performance record in controlled environments make it an essential tool for this research that aimed at promoting early PPFP utilization.

1.3 Statement of the Problem

The Sustainable Development Goal (SDG) Target 3.7 advocates for universal access to family planning (FP), emphasizing the need for information provision, education, and integration into other healthcare programs (WHO, 2023). However, despite advances in reproductive, maternal, neonatal, and child health (RMNCH) services in Kenya, the integration of FP information provision during the antenatal period remains limited (Chimbi, 2018). Only 25% of mothers nationwide receive FP education in the postnatal period, with Kisumu County slightly higher at 33% (KNBS, 2022a). This insufficient integration contributes to the high risk of unplanned pregnancies among postpartum women, particularly within the first year after delivery, a time when contraceptive demand is at its peak (Gebreselassie *et al.*, 2008; Moore *et al.*, 2015b).

Nationally, studies quantifying early postpartum FP (PPFP) uptake, along with attitudes, social normative beliefs, perceived individual control, or intention toward PPFP, are lacking. Similarly, Kisumu County lacks a structured approach to guide targeted FP information provision during antenatal care (ANC). Clinical practice observations in the area indicate that poor attitudes, low perceived control over FP choices, prevalent social normative beliefs, misinformation, and lack of clear eligibility criteria further hinder early PPFP uptake. The Kenyan Demographic and Health Survey (KNBS, 2022) highlights these concerns, showing only 25% of women adopt PPFP by six months and 35% by one year. Nyanza region, which includes Kisumu, has the shortest median postpartum abstinence and one of the shortest inter-birth intervals, with women in Kisumu County

averaging 5.6 children by ages 25-40—higher than the national average of 5 (KNBS, 2022b). This data suggests a pressing need to accelerate PPFP services in the county, especially given that only a fifth of postpartum women in Kisumu received of all the targeted postpartum care package including early PPFP (Mbugua & Kerry, 2018).

Antenatal care presents a critical opportunity for delivering structured FP information and counselling, potentially shaping postnatal FP uptake. However, the lack of a structured protocol for FP information provision and behavioural contracting during ANC limits the efficacy of these efforts. This gap often results in misconceptions and misinformation, as observed in clinical practice, further deterring PPFP uptake. Factors influencing the uptake of PPFP can be categorized as demand-side—sociocultural barriers, individual perceived behavioural control, and future intention—and supply-side factors, including healthcare provider skills, waiting time, availability of essential supplies, timely referrals, costs, and staff interpersonal skills (Kyei-Nimakoh *et al.*, 2017).

Prior research on PPFP is marked by significant methodological gaps. While literature exists on attitudes toward PPFP, there is limited interventional research comparing antenatal interventions in community versus facility settings. Furthermore, studies that focus on attitudes, social normative beliefs, control beliefs, and intentions for early PPFP within Kenya are scarce. The critical link between antenatal intentions and postnatal FP uptake remains underexplored.

This study, grounded in the Theory of Planned Behaviour (TPB), addresses these gaps by assessing the impact of targeted FP information provision to antenatal mothers in Kisumu County. Specifically, it examines whether providing context-specific information during

ANC can effectively increase early postnatal FP uptake. The findings are expected to offer valuable insights locally, regionally, and globally, supporting the goal of enhanced maternal and child health through informed family planning decisions.

1.4 Objectives

1.4.1 Main Objective

To examine the effectiveness of targeted antenatal FP information provision on early PPFP uptake in Kisumu County.

1.4.2 Specific Objectives

- i. To compare early PPFP uptake between control and intervention groups of postpartum mothers in Kisumu County.
- ii. To assess the effect of the intervention on individual attitude towards early PPFP uptake among postpartum mothers in Kisumu County.
- iii. To evaluate the effect of the intervention on of perceived social normative beliefs towards early PPFP uptake among postpartum mothers in Kisumu County.
- iv. To measure the effect of the intervention on perceived individual control of early PPFP choice among postpartum mothers in Kisumu County.
- v. To analyse the effect of the intervention on intentions for early PPFP among postpartum mothers in Kisumu County.
- vi. To investigate the determinants of early PPFP uptake among the study participants in Kisumu County.

1.4.3 Research Hypotheses

- i. There is no statistically significant difference between the intervention and control groups in early PPFP uptake.
- ii. There is no difference between the intervention and control groups in individual attitude towards early PPFP uptake among postpartum mothers in Kisumu County
- iii. The perceived social normative beliefs towards early PPFP uptake in the intervention and control groups in Kisumu County are the same.
- iv. There is no statistical difference in the perceived individual control of early PPFP choice between the intervention group and the control group of postpartum mothers in Kisumu County.
- v. The fertility intentions of postpartum mothers in the intervention and control groups in Kisumu County are not different.

1.4.4. Research question

- i. What are the determinants of early PPFP uptake among the study participants in Kisumu County?

1.5 Significance of the Study

Postpartum FP should be an integral part of RMNCH services especially ANC. Antenatal FP counselling activities have a positive effect on postpartum contraceptive uptake (Achut *et al.*, 2016). However, there is no structured, deliberate information giving integrated in ANC services. This said, the evidence was weak or incomplete and there were knowledge gaps, particularly regarding studies that explored the desires, intentions, and prio

rities of women or couples related to PPFP, which differs across settings and demography. Equally, there was inadequate exploration of operationally feasible ways to integrate PPFP information giving into existing ANC services. Further, there was a limited number of theory-guided pragmatic randomized control trials that are replicable.

Therefore, the study conducted in Kisumu County examined the effectiveness of targeted antenatal FP information provision on early PPFP uptake by a pragmatic randomised control trial. It explored a practical way of integrating PPFP information provision during ANC and determining fertility intention after delivery. The study has bridged a critical gap in the delivery of comprehensive FP information to antenatal mothers. In doing so, it has effectively addressed feasibility and effectiveness concerns of integrating FP information provision in ANC and laid a foundation for data-driven maternal choices.

Further, the study fills an evident gap by delivering an interventional research that compares community health promoters and nurse aided intervention geared towards improving early PPFP uptake. The findings, particularly bridging the nexus between antenatal intentions and early PPFP uptake, serve as a guiding framework for subsequent research and policy interventions.

The study's significance extends well beyond the confines of Kisumu County. The insights derived offer invaluable guidance for global health communities and researchers, as it was guided by a theory, meaning it can be replicated elsewhere. The study, therefore, provides a model which can be adapted in varied contexts as its interventions were simple and feasible.

1.6 Limitations of the Study

The study's goal was to examine if targeted FP information integration in antenatal care can have a significant effect on early PFP uptake. The intervention was specifically among individuals already attending ANC clinic. Therefore, a noteworthy limitation arises from the potential influence of selection bias, a systematic error resulting from choosing participants who were already attending ANC clinic as opposed to selection from the general population of pregnant mothers. This poses a considerable threat to the external validity of our study, more so, generalization to the population of pregnant mothers. Since the study was confined to those already attending ANC clinics, there was a risk that the characteristics of this subgroup were not representative of the broader population of pregnant women. This limitation is particularly pertinent when extrapolating our results beyond the confines of ANC attendees. The significance of selection bias is underscored by various scholars in the field. According to Kahan *et al.*, (2015), the generalization of findings from a specific subgroup to a broader population requires careful consideration of the potential biases introduced by the sampling strategy (Kahan *et al.*, 2015). In the current study, the reliance on ANC attendees may inadvertently skew the observed effects, limiting the extent to which our findings can be confidently extended to pregnant mothers who do not engage in ANC. Williams, (2020) emphasizes that understanding the external validity of intervention studies is essential for informing policy and practice (Williams, 2020). However, other studies posit that as much as generalization to the population might be impeded by selection bias, overall generalization to the health systems implementation of the recommendations should not be affected (Brownson *et al.*, 2022; I

nfanteRivard & Cusson, 2018; Leviton, 2017; Yang *et al.*, 2017). Equally, the current study had a community arm that caters for implementation at the community level. As such, while the current research sheds light on the potential impact of targeted FP information integration in ANC on early PPFP uptake, the limitation arising from selection bias must be acknowledged, communicated and carefully considered. To enhance the external validity of a study of similar vigor, future research efforts should strive to encompass a more diverse and representative sample of pregnant women beyond those exclusively engaged in ANC. This nuanced understanding will contribute to a more comprehensive evaluation of the intervention's potential impact on a broader spectrum of the pregnant women population.

Most of the participants were recruited in the third trimester. The study targeted those who were in the second and third trimester for practicality purpose since the study had one antenatal contact for targeted FP counselling. Equally, this is the time when most pregnant women consider their future fertility decisions (Dam *et al.*, 2022). This poses a limitation in the design of the study because other aspects like the number of antenatal contacts for FP counselling and the impact of having the intervention early in pregnancy cannot be ascertained. Recruiting participants earlier in pregnancy may also be beneficial for studying the factors that influence women's decisions about FP (Tran, Gaffield, *et al.*, 2018).

1.7 Theoretical framework of the study

The Theory of Planned Behaviour

(TPB) is a widely used psychological theory that was first proposed by Icek Ajzen in 1985 and has been widely used to predict and explain health behaviours. The theory propos

es that a person's behaviour is determined by their intention to engage in that behaviour, which is influenced by their attitudes, subjective norms, and perceived behavioural control (Ajzen & Klobas, 2013).

In the context of health behaviours, attitudes refer to a person's positive or negative feelings about a behaviour that affects their health. The Theory of Planned Behaviour (TPB) proposes that a person's attitude towards a behaviour is one of the predictors of intention to engage in that behaviour. Attitudes are formed based on a person's beliefs about a behaviour and the evaluation of those beliefs. A person may have a positive attitude towards contraception if they believe that it is beneficial for their health, and negative if they believe that it has far worse side effects than benefits or are not effective for their intended purpose of spacing or limiting births (Cooke *et al.*, 2016; Russo *et al.*, 2015). Attitudes are considered to be the most important predictor of a person's intention to engage in a behaviour, as they reflect the degree of evaluation of the behaviour. Positive attitudes towards a behaviour are associated with a higher intention to engage in that behaviour, while negative attitudes are associated with a lower intention (Ajzen & Cote, 2008). In the context of health behaviours, attitudes are important to consider when designing interventions aimed at promoting healthy behaviours, such as FP, healthy eating, and medication adherence. For example, an intervention aimed at increasing uptake of FP may involve providing information about the benefits of FP, addressing any misconceptions or negative attitudes that may discourage FP use, and promoting positive attitudes towards use of FP. Research has shown that attitude is a strong predictor of behaviour, and interventions that focus on changing attitudes have been found to be effective in promoting healthy behaviours (Armitage & Conner, 2001).

The Theory of Planned Behaviour

(TPB) proposes that subjective norms, or the perceived social pressure to engage in a behaviour, as another key factor that influences a person's intention to engage in a behaviour. In health, therefore, subjective norms refer to the influence of significant others, such as family, friends, and healthcare providers, on a person's behaviour. Subjective norms are based on a person's perception of the attitudes and behaviours of significant others towards a behaviour. For example, a person may be more likely to use contraception if they believe that their friends and family also use contraception, or if their healthcare provider encourages them to space their births or limit the number of children they bear for health and socioeconomic reasons (Hagger & Chatzisarantis, 2009; Johnson, 2017). When a person perceives that significant others approve of a behaviour, they are more likely to have a positive intention to engage in that behaviour, and vice versa. For example, if a person perceives that their friends and family approve of FP, they will more likely intend to use FP themselves (Johnson, 2017). Subjective norms are important to consider when designing interventions aimed at promoting healthy behaviours, such as use of contraception, healthy eating, and regular exercise. Intervention aimed at increasing FP uptake may involve encouraging social support for FP, through social networks being encouraged to use and give psychosocial support towards use of FP. Likewise, opinion leaders, community owned resource persons, healthcare providers can be used to promoting FP use (Thapa *et al.*, 2019).

Equally, perceived behavioural control, or the extent to which a person believes they have control over performing a behaviour, is one of the key factors that influence a person's intention to engage in that behaviour. In the context of health behaviours, perceived beha

vioural control refers to the resources, abilities and perceived ease or difficulty of performing a behaviour that affects person's health. Perceived behavioural control is based on a person's beliefs about the availability of resources and the ease or difficulty of performing the behaviour. For example, a person may be more likely to use FP if they believe that they have access to facilities that offer a variety of FP commodities to choose from and that it is easy to access and use without much inconvenience (Ajzen, 2002). Perceived behavioural control is a key determinant of behaviour, as a person's perception of the ease or difficulty of performing a behaviour has a direct impact on their intention to engage in that behaviour. For example, if a person believes that exercising regularly is easy and they have the resources to do so, they will be more likely to intend to exercise regularly, and vice versa. Perceived behavioural control is important to consider when designing interventions aimed at promoting healthy behaviours, such as FP, regular exercise, healthy eating, and medication adherence. If the health care system intends to increase regular exercise within the urban communities, it may involve making exercise resources more accessible, such as providing information about nearby exercise facilities, or addressing barriers to exercise, such as lack of time or physical limitations. Research has shown that interventions that focus on changing perceived behavioural control are effective in promoting healthy behaviours (Armitage & Conner, 2001; Conner, 2015). Therefore, perceived behavioural control plays a crucial role in the theory of planned behaviour, as it reflects a person's beliefs about their ability to perform a behaviour and it's an important predictor of a person's intention to engage in a behaviour. In the context of health behaviours, perceived behavioural control is important to consider when designing interventions aimed at promoting healthy behaviours (Boyko *et al.*, 2011; Lee *et al.*, 2016).

However, intention is defined as the degree to which a person has a plan to perform a behaviour. In the context of health behaviours, intention refers to a person's plan to engage in a behaviour that affects their health, such as smoking cessation, drug adherence, healthy eating, or regular exercise. The theory proposes that a person's intention to engage in a behaviour is influenced by their attitudes, subjective norms, and perceived behavioural control. If a person has a positive attitude towards a behaviour, perceives social pressure to engage in that behaviour, and believes that they have control over performing the behaviour, their intention to engage in that behaviour will be strong (Ajzen & Klobas, 2013). Intention is the most proximal predictor of behaviour, as it reflects a person's plan to engage in a behaviour. A strong intention to engage in a behaviour is associated with a higher likelihood of engaging in that behaviour, while a weak intention is associated with a lower likelihood (Caplescu, 2014; Lee *et al.*, 2016). Interventions aimed at promoting healthy behaviours should focus on increasing a person's intention to engage in that behaviour. This can be done by changing attitudes, subjective norms, and perceived behavioural control, as discussed previously (Hagger & Chatzisarantis, 2009).

Intention plays a crucial role in the Theory of Planned Behaviour as it reflects a person's plan to engage in a behaviour and it is the most proximal predictor of behaviour. In the context of health behaviours, interventions aimed at promoting healthy behaviours should focus on increasing a person's intention to engage in that behaviour by changing attitudes, subjective norms, and perceived behavioural control. The Theory of Planned Behaviour has been widely used to predict and explain health behaviours and has been supported by numerous studies in various fields such as physical activity, diet, and medication adherence (Cooke *et al.*, 2016). The theory can be used to design interventions that aim to in

crease the likelihood of a desired health behaviour by changing attitudes, subjective norms, and perceived behavioural control. For example, a campaign to increase FP may involve providing information about the benefits of FP, encouraging social support for FP, and making FP resources more accessible (Conner, 2015). The Figure 1.1 shows the interaction of the propositions in the TPB model as previously proposed (Ajzen & Klobas, 2013).

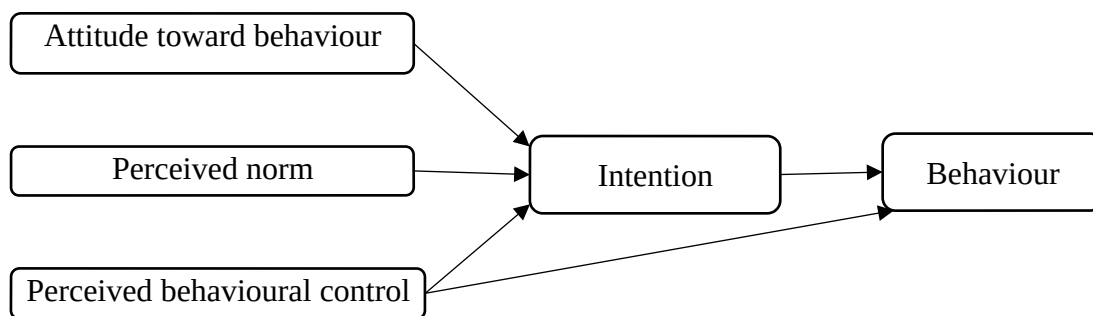


Figure 1. 1: Theory of Planned Behaviour Schema

1.7.1 Conceptualization of the Theoretical Framework

Theory of Planned Behaviour was conceptualized into a framework that was used to explain the interaction of variables in determining intention and the actual use of PPFP as illustrated in Figure 1.2. As much as the TPB is a widely validated and used framework for understanding and predicting human behaviour, reviewed literature shows that there are other factors that moderate behaviour, and that TPB can be modified by adding these as moderating factors to the model (Montanaro *et al.*, 2018). Other exogenous constructs such as individual characteristics and intervention aspects. The individual characteristics in this particular study were sociodemographic aspects, obstetrics history of the participants, past FP experience, and intimate partner relationships. The process related aspects were the intervention arms, the quality of counselling as rated by the client,

turnaround time for the counselling process, and counselling waiting time. These aspects were thus added to the TPB model to optimize it. These constructs have previously been found to be important predictors of behaviour in various studies and can provide additional insight into the factors that influence behaviour (Conner, 2015; Hamilton *et al.*, 2020)

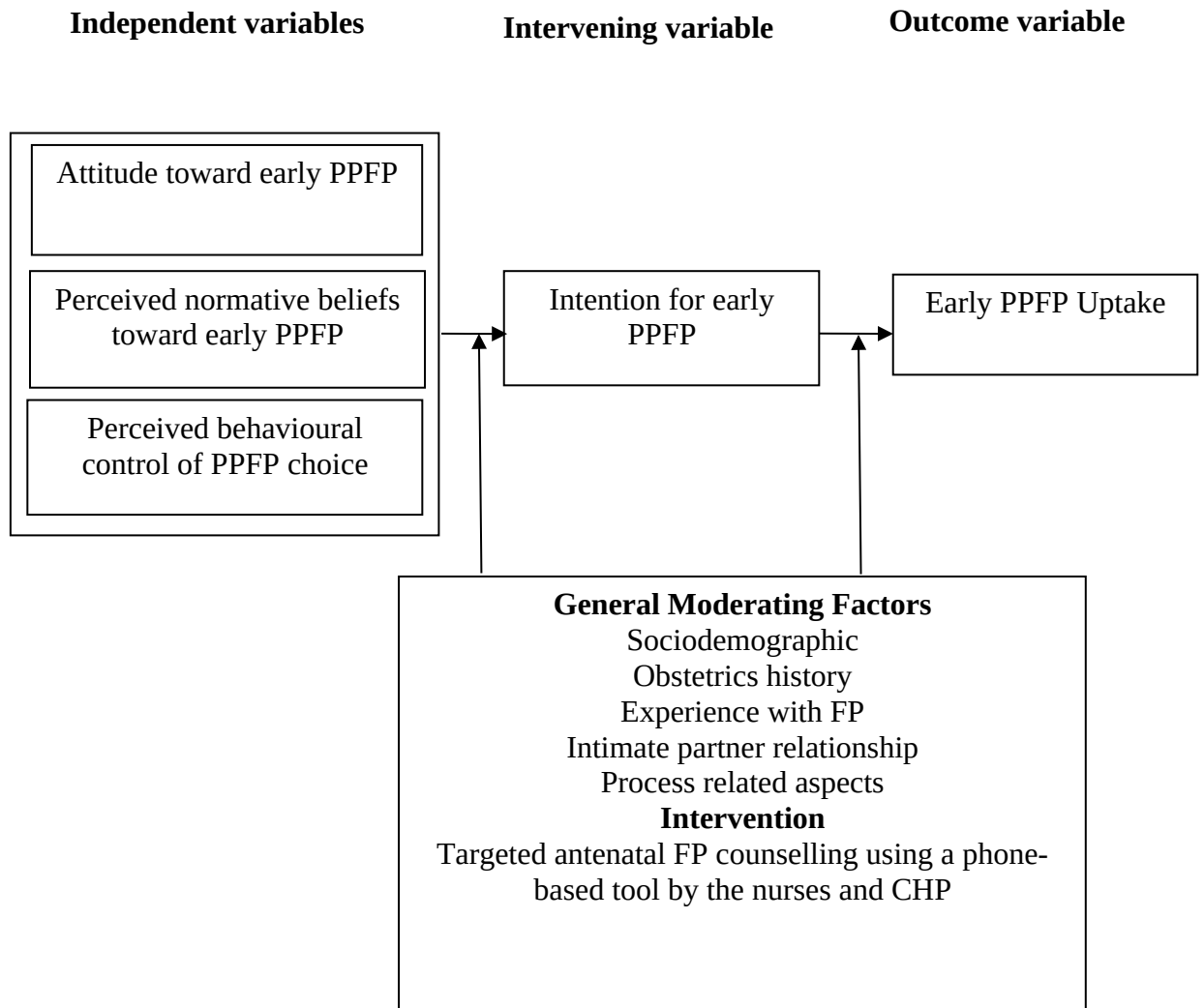


Figure 1. 2: Conceptual framework

1.7.2 Operationalization of the conceptual framework

The operationalization of the conceptual framework for the current study was as outlined in Table 1.1. This table translates abstract concepts of the conceptualized TPB model into measurable variables to facilitate empirical research. Attitudes towards behaviour, defined as the psychological inclination to approve or disapprove of a specific behaviour, are operationalized through assessing attitudes towards early PPFP uptake. This includes attitudes towards uptake itself, perceptions of recommended interbirth spacing, the perceived role of early PPFP in achieving such spacing, and considerations of potential side effects associated with PPFP.

Perceived normative beliefs, referring to individuals' beliefs about what is socially or culturally acceptable within their group, are operationalized through examining perceived normative beliefs towards early PPFP. This encompasses understanding what others within their social or cultural sphere think about PPFP use, expectations regarding client behaviour concerning PPFP, the influence of social pressures on PPFP uptake shortly after delivery, and the significance of partner approval of early PPFP.

Perceived behavioural control, defined as the belief in one's ability to make decisions, is operationalized through assessing the perceived behavioural control of early PPFP choice. This involves examining the client's confidence in using PPFP, their perception of the ease of PPFP use, and their belief that the decision to use PPFP is within their control.

Intention reflects the desire to engage in a particular behaviour, is operationalized by investigating the intention for early PPFP use. This incorporates understanding the client's desire to use early PPFP, their perceived need for it, and their intention to initiate early PPFP.

Lastly, behaviour itself, defined as observable actions in a specific situation, is operationalized through assessing the mother's actual use of early PPFP, indicating the commencement of PPFP following childbirth.

Table 1. 1: Operationalization of the conceptual framework

CONCEPT	DEFINITION	OPERATIONAL DEFINITION	STUDY VARIABLES
Attitudes towards behaviour	Psychological tendency to approve or disapprove target behaviour	Attitudes towards early PPFP uptake	Attitude towards; uptake, recommended interbirth spacing, role of early PPFP in attaining recommended interbirth spacing and side effects of PPFP
Perceived normative belief:	Beliefs about what is acceptable within their social or cultural group	Perceived normative belief towards early PPFP	What others thought; about use PPFP, is expected of client in terms of PPFP, Social pressure to use FP soon after delivery, Partner approval of early PPFP
Perceived behavioural control	Belief that one has the power to make decisions	Perceived behavioural control of early PPFP choice	Client is confident to use PPFP, belief that it is extremely easy to use PPFP and decision to use PPFP is in client's control
Intention	The desire to engage in a particular behaviour	Intention for early PPFP use	Client's; desire to use early PPFP, need to use early PPFP, and intends to use early PPFP
Behaviour:	Observable action in certain situation	Mother's use early PPFP	Commencement of early PPFP

1.7.3 Significance of the Model to the study

The efficacy of the TPB in predicting individual health-related behaviours has been demonstrated before. Systematic review focused on the relationship between intention and behaviour have predicted more than 20% variance in prospective measures of the actual behaviour of individuals. This variance in behaviour as explained by intention is similar in magnitude to that found in the extant literature (Boyko *et al.*, 2011). Since the TPB has been useful in predicting health related behaviour, it may also be useful in evaluating behaviour among postnatal mothers' fertility intentions and choices (Caplescu, 2014; Russo *et al.*, 2015).

Application of the TPB in any new context requires a tool to measure the variables related to the behaviour of interest and its correlations and, like any other measurement tool, it should demonstrate evidence of psychometric properties, such as validity and reliability. There is adequate evidence that supports the successful use of TPB to predict the PPFP use. Therefore, there are measurement instruments whose reliability and validity is known with high internal consistency and test-retest reliability thus can predict fertility intentions and PPFP choice (Ajzen & Klobas, 2013; Boyko *et al.*, 2011; Kiene *et al.*, 2014; Li *et al.*, 2019). The current study used Ajzen and Klobas (2013) guidelines to develop parameters to measure the exogenous and mediating constructs of TPB. The validity of the scores of each construct was within the agreed margin (Cronbach's $\alpha > 0.7$). Therefore, TPB provided a valid framework for implementing and measuring outcome of the interventions in terms of intention for early PPFP and actual early PPFP uptake.

Lastly, it is true that the TPB is focused on the controlled facets of human judgment, intention and decision making. According to the theory, subjective information in the form of behavioural, normative, and control beliefs provides the foundation for attitudes, intention and ultimately behaviour. This being a pragmatic randomized control trial, TPB was best placed to estimate fertility intention and eventually PPFP choices (Ajzen & Klobas, 2013).

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

The chapter reviews the relevant literature early postpartum family planning. The areas explored are; family planning methods, particularly those that meet the eligibility criteria for early postpartum period. The chapter also delves into uptake of early PPFP uptake, attitude towards early PPFP uptake, social normative beliefs towards early PPFP, individual perceived control of early PPFP choice, intention for early PPFP uptake, determinants for early PPFP uptake and established research gap.

2.2 Introduction

The postpartum period presents a significant opportunity for reaching women with effective family planning methods that can decrease the probability of unwanted pregnancy and increase the prospect of healthy birth spacing (Achyut *et al.*, 2016). During pregnancy and childbirth and postpartum period, women engage more with the healthcare system for antenatal care, delivery, postnatal care, and infant immunizations. Each of these encounters is an opportunity for health care workers to integrate FP into their existing counselling, assess for return to fertility and provide contraceptives that meet the needs of postpartum women. The provision of safe effective contraceptives in the postpartum period has the potential to reduce unwanted pregnancies and effect a reduction in both maternal and childhood morbidity and mortality arising from unsafe abortions and inadequate spacing of births. There are a number of effective and safe FP methods that women can use immediately after delivery to optimize birth spacing and timing. However, the unmet need of contraceptives remains high in the postpartum period with most of the untimed pregna

ncies in this period occurring between 28 days and 6 months (Shabiby *et al.*, 2015; Tran, Yameogo, Gaffield, *et al.*, 2018).

2.3 Family Planning

Family planning is the practice of controlling the number of children one has and the spacing between each birth, particularly by means of deliberate use of contraception, artificial methods or other practices, to avert pregnancy as an outcome of sexual intercourse (WHO, 2020). The methods of contraception used are; oral contraceptive pills, implants, injectables, patches, vaginal rings, intra-uterine devices, condoms, male and female sterilization, lactational amenorrhea methods, withdrawal and fertility awareness based methods. These methods have different modes of action and effectiveness in averting unplanned pregnancy. Because of the different modes of action and documented side effects, there is criteria that has been developed by the WHO called Medical Eligibility Criteria (MEC) for contraceptive use. The criteria guide on the safety of various contraceptive methods in the context of specific health conditions and characteristics (Kantorová *et al.*, 2020; WHO, 2020).

2.4 Postpartum Family Planning

Family Planning is a key component of health care continuum from the antenatal period, immediately after delivery and during the first year after birth. PPFP is defined as the prevention of unintended or unplanned pregnancies or closely spaced pregnancies within the first year following childbirth (Navodani *et al.*, 2017). PPFP strategies increase contraceptive use by reaching couples with the FP methods and messages before, around and after the parturition. This saves lives by promoting healthy spacing and timing of pregnan

cies thus reducing maternal, neonatal, infant and child morbidity and mortality. Postpartum FP could prevent more than 30% of maternal and 10% of infant deaths by effectively spacing birth-to-pregnancy intervals by at least 2 years and birth-to-birth intervals by at least 3 years (WHO, 2013b). Therefore, PPFP services aim to assist women and couples to decide on their preferred method of contraception, initiate that method, and continue use for ideally one year or longer, depending on their reproductive goals (Moore *et al.*, 2015a).

Women remain largely domicile, at least in the early part of the first 12 months post-delivery, therefore, PPFP programs can gain greatly from integrating services in both community and facility-based settings (Gebreselassie *et al.*, 2008). This can be achieved if PPFP initiatives are carefully adapted to the maternal, new-born and child health (MNCH) continuum of care that exists within a given country's health system to foster integration and sustainability (Tilahun *et al.*, 2022).

2.5 Family planning methods eligible for Postpartum Period

In the postpartum period up to 6 months after birth, a woman who is exclusively breastfeeding can use the Lactational Amenorrhea Method (LAM) and several other methods safely. If a mother chooses LAM, she should shift from LAM to another modern contraceptive method by the time the infant reaches 6 months of age, or sooner if there is no compliance with the 2009 WHO LAM criteria. Timely information provision to the mother should be instituted to empower her to choose another modern contraceptive method. A copper-based intrauterine contraceptive device (IUCD) can be inserted between 0-

48 hours after birth, or any time after 4 weeks postpartum based on cervical os patency changes. Female sterilization procedures, bilateral fallopian tube ligation (BTL) or tubal occlusion (TO) can be performed 0-96 hours after birth, or any time after 6 weeks postpartum. In addition to IUD and BTL, progestin-only methods can be initiated immediately following birth in non-breastfeeding mothers. Progestin-only methods such as progestin-only pills, injections, implants can only be initiated at 6 weeks following birth, as per WHO MEC in breastfeeding mothers. Combined oestrogen and progestin pills cannot be initiated until 6 months after birth. Both breastfeeding and non-breastfeeding mothers can initiate use of condoms immediately after birth, emergency contraception after 4 weeks, and the diaphragm or cervical cap after 6 weeks (WHO, 2015).

Family planning method mix also varies widely across regions and countries. Among FP users, the modern methods most commonly started after birth are injectable, COCs and condoms, respectively. Injectable methods form a majority of the methods chosen and ranging from 2.7% in Nigeria to 68.5% in Ethiopia. In Nigeria, women did not prefer sterilization methods (Abera *et al.*, 2015; Adeyemi *et al.*, 2005). Several surveys across different regions revealed that the use of LARC was significantly lower than short-acting modern methods after delivery (Moore *et al.*, 2015a; Pasha *et al.*, 2015). However, in Indonesia and Ethiopia, LARC formed a relatively larger proportion of the methods chosen. Mothers in West Africa preferred LAM (72.1%) and the calendar method (51.8%). Only studies from Ghana and Malawi reported implants as the preferred FP method after birth (O'Shea *et al.*, 2015; Robinson *et al.*, 2016). In Kenya, the KDHS of 202

2 revealed that the preferred contraceptive method among WRA was 3 monthly injectable at utilization rate of 13.6% (KNBS, 2022b). The other methods preferred were implants at 13.2%, oral pills at 5.3%, natural methods at 1%, and the male condom at 3.8% (KNBS, 2015).

2.6 Early Postpartum Family Planning uptake

As many as 9 in 10 postpartum women want to defer their next pregnancy for at least 2 years. This desire is consistent with the at least 24 months between delivery recommendation by the WHO. However, there is a substantial unmet need for FP, with an average of 60% of women of reproductive age not meeting their contraceptive needs globally (Kantrová *et al.*, 2020). Birth-to-pregnancy intervals are too short (<23 months) in more than half of pregnancies in low and middle-income countries. Despite the evidence that the risk of becoming pregnant resumes soon after birth and before 6 weeks after delivery, and that women should use contraception even if abstinent or before the menstrual cycle restarts, the unmet need for early PPF is still unimaginably high (Kassebaum *et al.*, 2014). Examined studies indicate that the uptake of PPF within three months varies significantly across regions and is influenced by various social determinants of health and the region's development index. Regional PPF uptake by 3 months is as follows: Middle East and Northern Africa have the highest uptake of about 55% with Egypt having the highest uptake in the region of 65% and Yemen (39%) as the lowest; Latin America averages around 40% while South East Asia and Oceania's is 38% with Indonesia having the region's highest (71%); Timor-Leste (13%) the lowest; Eastern and Southern Africa 25% and South Asia 22% where Bangladesh

esh has the regions highest (46%). West Africa has the lowest uptake of 18% among the regions that bear the largest unmet need for contraception in postpartum period, with Benin having the lowest uptake of 4% by the six months. In East and Southern Africa region, Zimbabwe has the highest uptake (69%) by 3 months while Kenya ranges among the least performers (18%). This analysis of regional Demographic Health Surveys (DHS), points to high unmet need for PFP ranging from 45% in Middle East and Northern Africa region to 82% in West Africa and East Africa (Avenir Health, 2020; Rossier *et al.*, 2015). The reviewed literature highlights a substantial unmet need for FP in the early postpartum period, with an average of 60% of women of reproductive age globally not meeting their contraceptive needs. This unmet need is particularly critical in low and middle-income countries, where birth-to-pregnancy intervals are often too short. This indicates a significant gap in addressing the reproductive health needs of postpartum women. Further, the literature suggests that there is a lack of methodologically rigorous studies that directly compare the effectiveness of nurses' interventions and community interventions in promoting PFP. Without such studies, it is challenging to determine which approach is more effective or whether a combination of both might be beneficial.

2.7 Individual attitude towards early PFP uptake

Globally, many women recognize the importance of early PFP for spacing pregnancies and maintaining their health. Having a positive attitude towards contraceptive methods and FP practices soon after childbirth has an influence on FP interventions seeking and ultimate uptake. Two studies in India showed that while behaviour change interventions i

improved attitude and increased acceptance of early PPFP, the impact of prior FP use on early PPFP is very key as this shapes the attitude of women towards early PPFP adoption (Mody *et al.*, 2014; Pal *et al.*, 2022). This underscores the fact that while studying the influence of an intervention to change attitude towards early PPFP, it is important to contextualize the influence of the intervention. Contextualizing FP interventions is supported by studies conducted in Africa that shed light on the multifaceted nature of women's attitudes toward early PPFP. Two such studies in diverse settings in Uganda and Ghana show that understanding the natural contraceptive effects of postpartum amenorrhea interval and breastfeeding significantly influenced FP acceptance. Thus, understanding the contraceptive effects of breastfeeding and addressing barriers to accessing FP services plays crucial roles in shaping women's attitudes toward early PPFP (Jalang'o *et al.*, 2017). Furthermore, positive partner attitudes toward FP correlated with increased FP service utilization (Coomson & Manu, 2019; Sileo *et al.*, 2015). Equally, low knowledge of FP methods has been identified as a key factor contributing to low contraceptive utilization in sub-Saharan African countries (Mekonnen *et al.*, 2021). Ethiopian studies indicated that knowledge, perception, and unmet needs for FP services significantly influenced women's attitudes and practices regarding PPFP (Embafrash & Mekonnen, 2019; Mekonnen *et al.*, 2021). One of the studies identified various factors, including women's age, pregnancy planning status, partner support, attitudes toward FP, and maternal satisfaction with care, as pivotal in immediate and early PPFP utilization (Silesh *et al.*, 2022).

In Kenya, the attitudes of women toward early PPFP exhibit a diverse spectrum of perspectives. While some women recognize the importance of spacing pregnancies and using contraception during the postpartum period, challenges and barriers persist. These include

e inadequate postpartum care and a high unmet need for FP services which hinder development of positive attitudes towards FP, access and utilization (Jones *et al.*, 2020; Mutea *et al.*, 2022). Moreover, missed opportunities for FP counselling during the antenatal period and cultural and societal factors significantly influence women's attitudes and their perceived need for contraception (Sileo *et al.*, 2015; Thiongo *et al.*, 2022). To address these challenges and improve attitudes toward early PPFP in Kenya, several strategies are essential. These include increasing community awareness about FP, promoting partner involvement in FP decisions, ensuring maternal satisfaction with antepartum and intrapartum care, and providing comprehensive and accurate information about the benefits of FP while addressing misconceptions (Jones *et al.*, 2020; Silesh *et al.*, 2022).

The reviewed researches on attitude towards early PPFP show a paucity of practical interventional studies that systematically compare the influence of antenatal interventions on women's attitudes towards early PPFP, particularly in the context of community-based versus facility-

based interventions. While existing research has provided valuable insights into factors affecting attitudes, there is a notable gap in understanding the differential impact of these two intervention approaches on shaping women's attitudes and subsequent behaviours regarding early PPFP. Addressing this research gap is essential for the development of evidence-

based pragmatic strategies that can effectively promote FP during the postpartum period, ultimately contributing to improved maternal and child health outcomes.

2.8 Social normative beliefs towards early PPFP uptake

Understanding social normative beliefs related to early PPFP is crucial globally, particularly in low- and middle-income countries where there's a rising demand for early PPFP services (Cleland *et al.*, 2015). Studies have revealed a desire among women in these nations to commence contraception shortly after childbirth. Nevertheless, disparities in modern PPFP use persist, linked to factors like education, residence, and wealth, necessitating targeted interventions to address these inequities (Cleland *et al.*, 2015; Hounton *et al.*, 2015). Diverse regions exhibit varying social normative beliefs about early PPFP with the emergence of the fact that government interventions are key in change of social narratives and norms about PPFP. In the Dominican Republic, FP is seamlessly integrated into antenatal, delivery, and postpartum care, representing an advanced approach. Nicaragua has prioritized PPFP since 1994, with many women eager to initiate contraception immediately post-delivery (Cleland *et al.*, 2015). In contrast, Ethiopia has witnessed increased PPFP uptake among adolescents, but disparities persist across sub-national regions (Hounton *et al.*, 2015).

Social normative beliefs concerning early PPFP are influenced by cultural and socio-economic factors, causing variations. Age-related factors play a role, with older women more likely to utilize PPFP due to cultural norms and socio-economic status. This underscores the importance of considering age-related factors in addressing early PPFP needs (Taye *et al.*, 2019). Women's social normative perceptions regarding FP significantly shape their fertility intentions and actual uptake. An in-

depth understanding of PPFp social norms is vital in addressing misconceptions. Unfortunately, there's limited information regarding women's social normative perceptions related to postpartum contraceptive use (Mekonnen *et al.*, 2021). This underscores the importance of ascertaining social normalized attitudes towards FP and information giving in reshaping the PPFp normative beliefs and behaviour. Other factors influencing social normative beliefs surrounding early PPFp are age, partner support, attitude toward FP, and maternal satisfaction with antepartum and intrapartum care. Enhancing immediate PPFp utilization necessitates multipronged approach including community initiatives, promoting partner involvement, and integration in antepartum and intrapartum care (Silesh *et al.*, 2022).

Despite many women's desire to delay or prevent future pregnancies during the postpartum period, a high unmet need for early PPFp persists. Fertility intentions and contraceptive usage vary among women in the early postpartum period (Pasha *et al.*, 2015). Inadequate antepartum care contributes to the high unmet need for PPFp, resulting in short birth spacing and increased risks for mothers and newborns (Jones *et al.*, 2020). Traditional methods like breastfeeding and abstinence hinder the adoption of modern PPFp methods in Sub-

Saharan Africa further complicating the effort to address the high unmet need in early postpartum period. Health services must address these socially normalized practices and provide early access to PPFp services (Rossier & Hellen, 2014). These findings underscore the need for tailored interventions that consider sociodemographic aspects, and cultural norms to improve FP practices during the postpartum period (Mekonnen *et al.*, 2021; Taye *et al.*, 2019).

In spite of the existing literature on global, regional, and some country-specific social normative beliefs on early postpartum FP, there are still research gaps that need to be addressed. The Kenyan context has inadequate extant evidence on status of social normative belief towards early PPFP (Gage *et al.*, 2021; Sumit *et al.*, 2016). There's a need for studies specifically focused on Kenyan context that focus on quantitative assessments of social norms' impact on FP intentions among different populations, exploration of social norms within diverse ethnic groups, and assessments of interventions targeting social normative beliefs' impact on early PPFP uptake and outcomes.

2.9 Individual control of early PPFP choice

Globally, the perceived control of early PPFP choice among women is shaped by myriad determinants. One fundamental determinant is women's awareness and comprehension about contraceptives and the influence of significant others including partners' attitudes on women's FP choices (Mekonnen *et al.*, 2021; Sileo *et al.*, 2015). Such knowledge is instrumental for interventions in enabling women to make well-informed decisions and cultivate positive perceptions towards FP. Moreover, during the antenatal care phase, healthcare providers have a golden opportunity to offer counselling on the importance of FP and share comprehensive information about available contraceptive methods thus empowering women to make informed choice of early PPFP (Roy *et al.*, 2021).

Furthermore, the socio-cultural background significantly shapes women's perspectives and decisions regarding early postpartum FP. Social norms about fertility, shared experiences among peers, peer discussions, and experiences with the healthcare system often mold postpartum women's viewpoints and decisions about FP (Spagnoletti *et al.*, 2018). Moreover, the empowerment of women, characterized by their autonomy and

decision-making capabilities, significantly sways their choice and use of early PPFP (Yonas *et al.*, 2019). In resource-constrained environments, integrating decision-support tools like mobile health contraceptive decision aids has proven efficacious in aiding women to make informed contraceptive choices (Dev, Woods, *et al.*, 2019). Such integrations within existing FP structures can substantially improve access to vital information and support women in aligning their choices with their individual preferences.

In Kenya, the situation somewhat mirrors the global scenario, but with certain unique challenges and opportunities. A Kenyan study found a notable increase in postpartum care-seeking behaviour and FP uptake when women received supportive information via mobile short messaging services (Jones *et al.*, 2020). Factors such as socio-demographics and facility-based support played a pivotal role in enhancing mothers' perceived control of FP choice and uptake, with a noteworthy 68% of women reporting contraceptive use (Mutea *et al.*, 2022). Interventions that facilitated community dialogues about gender and FP in Nyanza region have also shown promise in reshaping societal norms around FP, thereby empowering women in making informed choice that is socially normalized (Wegs *et al.*, 2016). Similarly, a study conducted in rural Western Kenya emphasized the importance of education, suggesting that it has a more pronounced effect on attitudes towards FP and ultimately on the choice of method than the prevailing sociocultural background (Bakibinga *et al.*, 2016).

While various studies have identified the barriers, attitudes, and cultural practices that impact the perceived control of PPFP, there is a scarcity of interventional studies that aim to rectify these barriers or change perceptions. The majority of cited studies provide observational data, often failing to move beyond highlighting issues to suggesting,

implementing, and evaluating solutions. Furthermore, there is a lack of rigorous research that devises measures or scales to quantify women's perceived control of PPFP choice. Without such standardized measurements, comparing and synthesizing results across different contexts becomes challenging, limiting the ability to craft universally applicable interventions. Also, while the importance of counselling during the antenatal period has been established, there's a stark absence of research focusing on the establishment of early PPFP choice during this period. Such preemptive measures could serve to enhance women's preparedness, and potential for informed choice thereby potentially elevating the uptake rates of PPFP post childbirth. Moreover, the role of establishing a definite postnatal follow-up during the antenatal period and its direct impact on early PPFP uptake is scarcely explored. As such, while the literature has done an admirable job identifying the problems and hurdles, there is an evident need for interventional research. This should aim not only to challenge and change existing perceptions but also to establish protocols for early PPFP choice during antenatal care, and to analyze the efficacy of a structured postnatal follow-up and its influence on actual PPFP uptake. Addressing these gaps is imperative to bridge the disconnect between perceived control and actual utilization of PPFP services.

2.10 Intention for Postpartum Family Planning uptake

The global unmet need for contraception in developing countries is high, with 214 million women of reproductive age wishing to avoid pregnancy but not using a modern method of FP. Sub-Saharan Africa has the lowest modern contraceptive use compared to other world regions, with low uptake of PPFP. Fertility and projected population growth in sub-Saharan Africa are higher than in other regions, highlighting the importance of addressing

the low uptake of PPFp in this context (Lori *et al.*, 2018; Sedgh *et al.*, 2016). Understanding women's intentions toward early PPFp remains vital across various geographies and contexts. Internationally, trends differ in the intention and adoption toward PPFp. Fertility intentions in postpartum period range from birth limiting to birth spacing. In Eastern and Southern Asia, desire for birth spacing (67.5%) and birth limiting (58%) are significantly higher as compared to East Africa's 51.2% and 31.7% for birth spacing and limiting, respectively (Abraha *et al.*, 2018; Hubacher *et al.*, 2013; Mengesha *et al.*, 2015; Sedgh *et al.*, 2016). Notably, both Ethiopia and Ghana report a significant convergence, with approximately 70% of women showing intentions to use modern contraceptives postpartum (Abraha *et al.*, 2018; Eliason *et al.*, 2013; Gebeyehu *et al.*, 2020). Such similarity in rates can likely be attributed to comparable sociodemographic characteristics shared by study participants in the two nations.

The factors determining women's intentions toward PPFp are multifaceted, spanning perceived norms, personal agency, male partner support, and antenatal counselling. In Ethiopia, there's evidence suggesting male partner approval significantly influences PPFp intentions. Similarly, in northern Tanzania, antenatal counselling has been observed to positively shape these intentions. However, challenges remain, misconceptions such as the reduced pregnancy risk tied to breastfeeding and concerns like side effects and partner disapproval, often hinder the adoption of PPFp (Gage *et al.*, 2021). In Southern Ethiopia, antenatal care visits play a pivotal role. Women attending these visits exhibit stronger intentions to adopt modern contraceptives compared to those who don't (Gebeyehu *et al.*, 2020). Such visits not only offer health care but also serve as critical educational touchpoints on PPFp. Factors like the return of menstruation after childbirth,

understanding of contraception, and spousal consent further steer these intentions. In Ghana, nuances such as the gender composition of living children significantly influence unplanned pregnancies, suggesting a complex interplay between sociocultural aspirations and contraceptive use intention and choices (Kofi *et al.*, 2018). In a Ugandan study where a voucher with an appointment date was used as one of the interventions in antenatal and immediate postpartum period, there was increased uptake of early PPFP due to the prior decision on future fertility intention (Atukunda *et al.*, 2019). Therefore, earliest opportunity to establish mother's intention for PPFP has been demonstrated to impact positively on the uptake of FP early in the postpartum period.

In Kenya, a study by Ooko *et al.* (2022) established the determinants of early PPFP uptake. The study highlighted the significant influence of social networks on PPFP decisions, emphasizing the societal and community fabric in reproductive health choices (Ooko *et al.*, 2022). Factors such as education and marital status crucially predict their FP intentions post-delivery. This underscores the need for FP initiatives that address the distinct needs of mothers to bridge the gap between early postpartum contraceptive intention and adoption. Comparatively, Pasha's 2015 study, encompassing five low-income countries, revealed a substantial desire among women to delay or avoid subsequent pregnancies. Yet, there existed disparities in actual contraceptive usage across the regions. Young mothers, especially those below 20, presented the highest unmet needs, emphasizing the urgency for focused PPFP programs in this age bracket due to related health risks (Mutea *et al.*, 2022; Pasha *et al.*, 2015). Lastly, Naanyu's 2013 research in western Kenya presented spotlighted FP practices and their barriers. Key influencers included family support, literacy, information accessibility, side effects, costs, and religious beliefs. The findings

advocate for strengthened service delivery and targeted information giving to further promote PFP adoption (Naanyu *et al.*, 2013).

The present literature largely provides a descriptive landscape without necessarily delving into interventional strategies that can address intentions. This leaves a scarcity of interventional studies that not only identify but also actively engage with mechanisms to determine and influence women's intentions during the antenatal period. Determining intention is one facet, but understanding how these intentions, when established during the antenatal period, directly influence the actual uptake of early PFP remains largely uncharted. The myriad of factors influencing PFP intention, ranging from socio-cultural to individual, suggest that interventions tailored to these determinants could greatly improve contraceptive uptake. Such interventions, if strategically implemented during the antenatal phase, might significantly bridge the gap between intent and actual adoption of PFP. This presents an opportunity for more interventional studies that not only gauge but also actively enhance the alignment between antenatal intentions and the actual uptake of early PFP postpartum. Addressing this research gap can contribute to more effective strategies in reproductive health, enhancing both the intention and the actual use of PFP in the critical postpartum period.

2.11 Determinants of Postpartum Family Planning uptake

Determinants of early PFP uptake significantly vary across diverse contexts, with several studies shedding light on the influential factors guiding women's choices. These determinants possess a broader global perspective, but their effects vary across the globe, regionally and locally. Globally, the decision-making process around PFP is profoundly influenced by the perception of pregnancy risks and the potential benefits of

contraception. Women who perceive high pregnancy risks or desire to prevent future pregnancies lean more towards PPFp. Contrastingly, apprehensions about future infertility and lower perceptions of pregnancy risks might deter its use. The global narrative also reveals that prior experience with contraception boosts its postpartum uptake; familiarity and comfort play a pivotal role (Dev, Kohler, *et al.*, 2019).

Studies show the importance of sociodemographic characteristics as determinants of early PPFp uptake. Research from Ethiopia pinpoints factors such as age, education level, marital status, and socio-economic status as either catalysts or barriers to PPFp uptake (Abbasi *et al.*, 2020; Tilahun *et al.*, 2022). That younger women of reproductive age use PPFp more than older women to space birth as opposed to limiting the number of children has been demonstrated by Mody *et al.* (2014). Similarly, women who are more educated, have higher socio-economic status and live in urban residence are likely to use PPFp (Hounton *et al.*, 2015; Mody *et al.*, 2014; Mumah *et al.*, 2015; Sipsma *et al.*, 2013). However, a study in Sri Lanka revealed that contraceptive use is higher among low socio-economic status women. This can be attributed to postnatal home visits by midwives who in turn refer women for FP (Navodani *et al.*, 2017). Male partner support and marital status are also determinants of use and consistency of uptake of postpartum FP. In contrast, infrequent sexual activity occasioned by having no current partner leads to reduced need for contraception (Abraha *et al.*, 2017; Gebremedhin *et al.*, 2018). Mother's attitudes towards FP methods are influenced by sociocultural norms, traditional beliefs, religion, among others. It is known that these factors shape attitudes that later dictate choice and perceived behavioural control and behaviour. The prevailing sociocultural view has been that prolonged sexual abstinence after childbirth is important for perceived family health.

These norms form precursor for widely acceptable sociocultural beliefs about PPF (Obwoya *et al.*, 2018; Sensoy *et al.*, 2018).

Acceptance, use and maintenance of use contraception during the postpartum period is influenced by cultural and religious factors. Two studies reviewed described cultural and religious norms encouraging childbearing and/or prohibition of contraception for postpartum mothers (Kofi *et al.*, 2018; O'Shea *et al.*, 2015). Regional differences in the desired number of children varies and can partially explain the regional differences between parity and contraceptive use. These differences can be due to strong socio-cultural disparities between the regions. In Kenyan study, the use of contraceptives in postpartum period was shown to be less among women with higher parity (≥ 4) than women with lower parity (Mumah *et al.*, 2015). On the contrary, in Southeast Asia, postpartum women were more likely to use contraception if they had more children (Mody *et al.*, 2014; Withers *et al.*, 2010).

Resumption of menses which arbitrarily marks the return to fertility among postpartum women, has been shown to trigger contraceptive initiation among women in Kenya, Ethiopia and Tanzania. Most women in these studies perceived pregnancy risks to be low during postpartum and lactational amenorrhea period, despite the known possibility of the return to fertility prior to resumption of menses. In some of the studies reviewed, breastfeeding was cited as the most frequent reason given by mothers for non-use of contraception after delivery (Elweshahi *et al.*, 2018; Keogh *et al.*, 2015; Moore *et al.*, 2015a; Ndugwa *et al.*, 2011). Lactating mothers who avoid using hormonal contraception while breastfeeding had the belief that hormonal FP reduces milk production, and that the hormonal contraceptive can be transferred into milk and that might harm the infant

(Mohammed *et al.*, 2016). In other studies, contraceptive use was also significantly higher among mothers who reported the need to limit or space their next pregnancies as compared to women who had a desire for more children (Pasha *et al.*, 2015; Robinson *et al.*, 2016). Some studies revealed that integration of counselling in ANC and/or PNC improved contraceptive use, however the results were not as robust as these were just cross-sectional surveys. Counselling in both settings demonstrated more synergy in enhancing PPFP uptake (Abera *et al.*, 2015; Abraha *et al.*, 2017; Mengesha *et al.*, 2015).

Skilled birth attendance (SBA) and delivery in a health facility has been shown to be a strong determinant of postpartum contraceptive use. Family planning counselling during MCH care was another important predictor of PPFP. However, when women were counselled during both antenatal and postpartum care, the uptake was seen to be higher. Most of the women in the studies had been counselled during their postnatal visits. Family planning counselling in some of the studies was either reported or observed to be missing during the antenatal period or not as rigorous (Abraha *et al.*, 2017; Chhabra *et al.*, 2016; Mengesha *et al.*, 2015). One study conducted in Ghana showed that multiple contraceptive counselling sessions in ANC/PNC did not increase PPFP use. Poor quality of counselling services may explain these discrepant results, since several studies reported that women received inadequate information during FP counselling, incomplete counselling, inadequate counselling on safety and efficacy of LARC, or misinformation on FP from providers (Morhe *et al.*, 2017).

Health care worker's interpersonal skills and counselling provided during ANC visits was seen as a determinant for uptake on delayed postpartum FP in Ethiopia (Coomson & Manu, 2019). Training health workers on FP, health institutional delivery,

postnatal care service, and assigning 2-3 health extension workers to health care posts were seen to improve PPFP trends in another study (Ashebir & Tadesse, 2020).

Normative expectations, individual self-efficacy, and societal constructs are pivotal, further highlighting that empowerment and norm-based strategies can considerably drive PPFP (Gage *et al.*, 2021). Moreover, access to relevant information and healthcare services emerge as a decisive factor. Barriers like limited FP knowledge or restricted access to services hinder PPFP uptake, underscoring the necessity for antenatal FP information and broader healthcare access (Tilahun *et al.*, 2022; Tran, Yameogo, Gaffield, *et al.*, 2018).

Narrowing down to Kenya's distinct experiences, socio-cultural beliefs, perceptions of individual control over PPFP, and the influence of male partners also weigh heavily on a woman's decision (Kungu *et al.*, 2020; Shisanya *et al.*, 2022). Determinants of early PPFP choices go across perceptions, prior contraception experience, sociodemographic attributes, societal norms, accessibility to information, and healthcare infrastructure. Their interplay and significance differ from one setting to another with further local peculiarities like in Kenya. Recognizing these determinants is instrumental for effective policy formulation and interventions aimed at elevating PPFP uptake across different contexts.

Though studies have investigated factors like the place of delivery and contraceptive method preferences among younger women in Kenya, limited research specifically targets early PPFP choice determinants. The influence of socio-cultural beliefs and individual control on PPFP choice remains understudied. Additionally, the role of fertility intentions in shaping contraceptive use, as evidenced in comparative studies between Kenya and Nigeria, suggests another potential research avenue (Babalola *et al.*, 2015). While research by Kungu *et al.* (2020) offers insights into contraceptive choices among younger women, theory-based exploration of determinants for early PPFP choice remain inadequate (Kungu *et al.*, 2020). More focused research is needed in Kenya to explore determinants of early PPFP choices, considering aspects like socio-cultural beliefs, individual control, fertility intentions, and one that is theory based. More so, there is no interventional study locally that explored the determinants of early PPFP uptake as a primary outcome of the intervention. Addressing these gaps will empower policymakers and healthcare providers to create effective FP strategies.

2.12 Summary and Research Gap

The prevailing research predominantly lacks rigor in methodological approaches, specifically when comparing the effectiveness of early PPFP promotion interventions led by nurses versus community-based interventions. There is inadequate comparative studies making it difficult to ascertain the superior approaches in enhancing early PPFP uptake.

Reviewed researches highlighted attitudes towards early PPFP with a glaring shortage of interventional studies. This deficit was particularly apparent when comparing the effects of antenatal interventions in the backdrop of community-based versus facility-based interventions. An in-depth understanding of how these varied interventions shape women's attitudes towards early PPFP remains unexplored. To evolve effective evidence-based strategies, addressing this research void becomes essential in enhancing early PPFP.

Even though there's ample literature spanning global, regional, and some country-specific social normative beliefs regarding early postpartum FP, research specific to the Kenyan context is conspicuously lacking. There's a pressing need for research that not only evaluates the influence of social norms on FP intentions among various populations but also delves into the intricacies of diverse ethnic groups. Additionally, interventional studies examining the role of social norms in early PPFP uptake remain scant.

Research has succeeded in identifying barriers affecting perceived control over PPFP. However, the leap from identification to interventional solutions remains largely untouched. Most studies focus on observational data, overlooking the need for proactive measures and evaluative methods. There's a glaring gap in creating standardized tools to measure women's perceived control over PPFP choice, hampering cross-contextual comparisons. While antenatal counselling's significance is known, studies emphasizing

the value of establishing early PPFP choice during this phase, or the importance of a structured postnatal follow-up, are missing.

Although current literature paints a broad picture, it generally fails to plunge deep into interventional tactics to shape intentions. A dearth of studies exists that effectively engage with processes to ascertain and guide women's intentions during the antenatal phase. Moreover, the connection between these intentions and the eventual uptake of early PPFP post childbirth remains vastly unexplored. Tailoring interventions to the numerous determinants influencing PPFP intention could act as a game-changer in bridging intent and adoption.

While research touches upon aspects like delivery location and contraceptive preferences, the focus on determinants guiding early PPFP choice is skimpy. The socio-cultural influences, individual agency, and fertility intentions' role in shaping contraceptive use, remain inadequately explored. Moreover, studies rooted in theoretical frameworks, especially those targeting early PPFP determinants in Kenya, are scant. The local context is particularly bereft of interventional studies that view early PPFP uptake determinants as a primary outcome, leaving a void that needs to be addressed for effective family planning strategy formulation.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter describes the study area, study design, and study population including inclusion and exclusion criteria. Equally, the chapter details how sample size was determined, the sampling technique used, intervention procedure, data collection procedure, and data management. The analysis plan is also explained in detail from general to analysis per objective. Lastly ethical considerations for the study are outlined.

3.2 Study Area

The study was carried out in facilities in Kisumu County. Kisumu County is one of the developed units of Kenya. Its borders follow those of the original Kisumu District, one of the former administrative regions of the former Nyanza Province in Western Kenya. Its headquarters is Kisumu City. The County covers an area of 805 square miles, and has population of 1,155,574 (KNBS, 2019). The study was in Kisumu East subCounty, one of the seven sub-Counties of Kisumu County (Appendix 1).

This study was conducted in the community and primary health centres in in Kenya, Kisumu County. The subCounty that was purposively selected for the research is Kisumu East because it has facilities both in the rural and urban setting. The randomly sampled facilities are Migosi Health Centre

(HC) and Gita HC for intervention in urban and rural area, respectively. The Community Units

(CU) for community based intervention were Kuoyo CU and Orongo CU in urban and ru

ral area, respectively. The control facility were Nyalunya HC and Chiga HC in urban and rural area, respectively.

3.3 Study Design

This was a prospective interventional study, a pragmatic cluster Randomised Control Trial

(RCT) with three arms. These were nurses' intervention arm, community intervention arm and a control arm. The study had three interacting phases namely, the pre-intervention phase, intervention phase and post-intervention phase. The methods in each phase were not complex thus the overall design was a simple intervention design.

During the pre-

intervention phase, intervention package was designed, site selection done, and data collection tools developed. Equally during this phase, there was development and publication of the study protocols. The pre-

intervention phase took approximately 6 months from July 2021 to January 2022. In the intervention phase, enrolment to the study, administering of intervention and client exit interview were done. Participants in the experimental group received the targeted early PFP information package, while those in the control group received the usual routine care. The intervention was administered by the nurses in the nurses' arm

(Appendix 2) and by the Community Health Promoters (CHP) in the community arm (Appendix 3) while routine care was administered in the control arm

(Appendix 4). The intervention phase of the study lasted from February to August 2022.

The intervention was provision of antenatal information on PPFP using a mobile phone-based standardized PPFP counselling tool

(Appendix 5) (Ambreen *et al.*, 2015). The control group was under the routine standard antenatal care. There was antenatal PPFP information provision refresher training for the service providers in both intervention arms and the control arm to maximize beneficence even for those in control group.

The exit interview

(6) was embedded in the intervention phase and took place at the six centres; the two nurses' intervention centres, the two control centres and the two community intervention link facilities. In line with the TPB approach, the study consisted of an implementation evaluation to analyse moderation and mediating effect related to individual characteristics, process fidelity, and TPB constructs.

Figure 3.1 illustrates the three arms of the RCT and flow of activities at each stage and phase. A written consent

(7) and Kobo Collect based Case Report Forms with inclusion criteria checklist embedded (8) formed schedule of enrolment. Appointment card

(9) and Site Visit appraisal template

(10) were key to ensuring fidelity in conduct of the RCT.

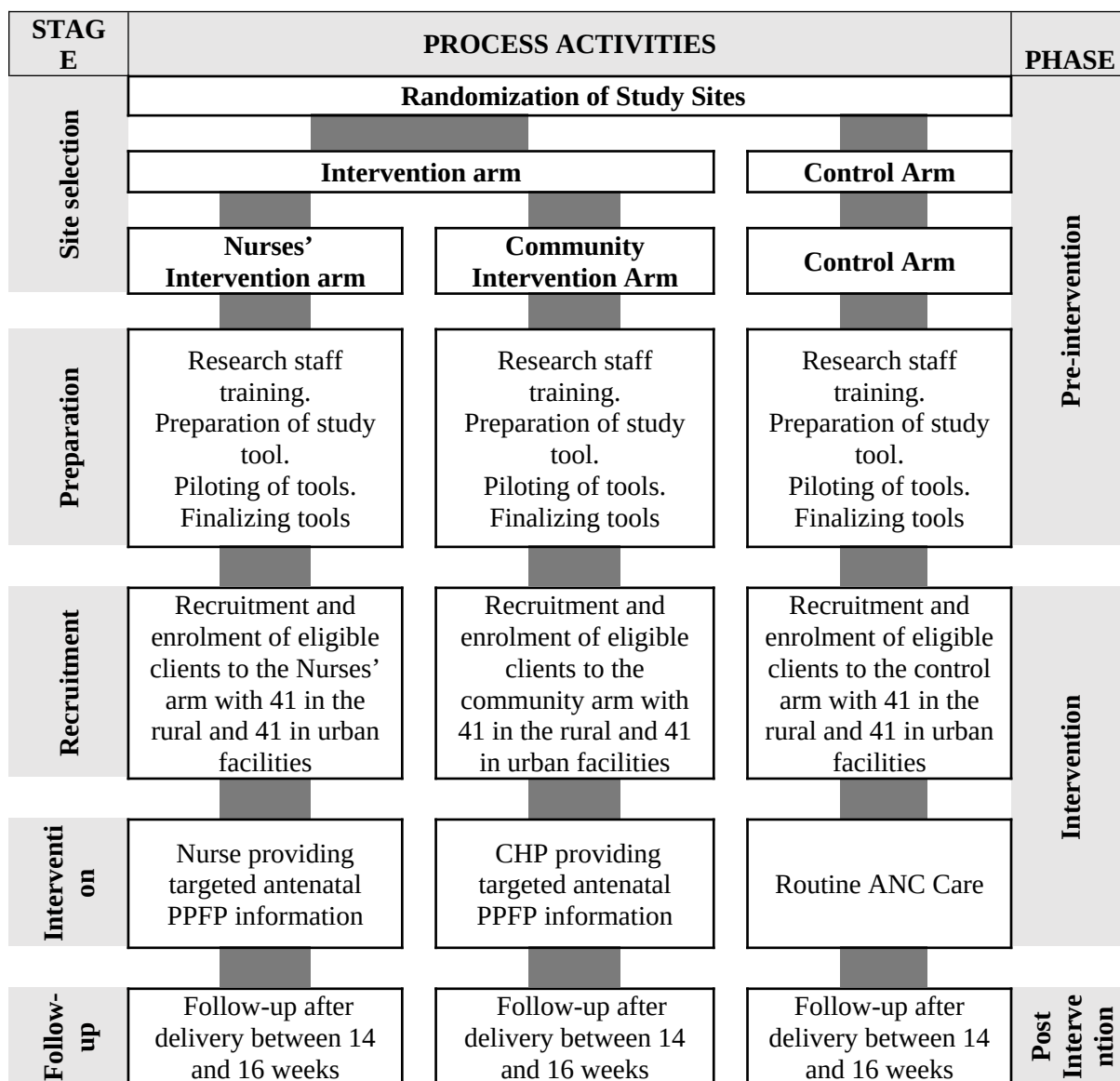


Figure 3. 1: Flow chart for arms of the study and key activities

3.4 Study Population

This study was among pregnant mothers in their second or third trimester attending ANC clinic in the study facilities or are within the respective community Units (CUs).

3.4.1 Inclusion Criteria

The study was conducted in 6 facilities, 1 primary health centre in rural and urban areas for the nurses' and control arms and 1 community in rural and in urban for the community arm. The Health Centres were eligible if:

- i) They offered the continuum of ANC, delivery, and PNC.
- ii) They provided a selection of at least three modern contraceptive methods that are rated 2 or 1 on the Medical Eligibility Criteria (MEC) for early postpartum contraceptives, including a barrier method such as condom, a shortterm method such as pills, a longterm method such as intrauterine device and referrals for permanent methods to clients.
- iii) They had no stock-outs of contraceptives during the preceding six months.
- iv) They had on average at least 10 deliveries per month; and
- v) They were willing to participate.

All pregnant women were eligible to participate in the study if:

- i) They are in their second or third pregnancy trimester.
- ii) The woman was attending ANC and has intention of attending PNC at the Health Centre.
- iii) An informed consent was obtained.
- iv) Resides within 20km.

3.4.2 Exclusion criteria

Excluded from the study was:

- i) Those that meet selection criteria but are participants in another study.
- ii) Latex Sensitivity.
- iii) Not anticipating a male partner in the next 12 months.
- iv) Unable to complete consent form as determined by the study nurse or CHP.
- v) The only male partner has had a vasectomy.

3.5 Sample Size Determination

The sample size was estimated based on the following assumptions: among women at three months postpartum, KDHS data report 27% of use of any method

(modern or traditional) in Kenya while the CPR in the general population is 53% (KNBS

, 2015). These figures allow the assumption of a desired 26% difference between control and the intervention groups

(26% increase in adopting a family planning method by three months postpartum). Therefore, the sample size was calculated pairwise for two separate RCT for community arm and the control and the nurses arm and the control (Fleiss *et al.*, 2004; Freidlin *et al.*, 2008; Kane, 2018; Rosner, 2015). Rosner, 2015 proposed the sample size determination formula for difference in proportions with consideration of type I and II errors and power as

$$N = \{z_{1-\alpha/2} \sqrt{(\bar{p} \hat{q} [1+1/k])} + z_{1-\beta} \sqrt{(p_1 q_1 + [p_2 q_2/k])}\}^2 / 0.26^2. \text{ Where; } q_1 = 1 -$$

$p_1, q_2 = 1 - p_2, \bar{p} = 0.4, \hat{q} = 0.6, p_1$ and p_2 = proportion (incidence) of groups #1

(early postnatal group FP prevalence) and #2 (WRA in Kenya FP prevalence), $\Delta = |$

$p_2 - p_1|$ = absolute difference between two proportions, n_1 = sample size for group #1, n_2

= sample size for group #2, α = probability of type I error

(is set at 0.05), β = probability of type II error

(is set at 0.1 i.e. 90% power), z_1 and z_2 = critical Z value for a given α or β , K = ratio of sample size for group #2 to group #1.

$$\text{Thus, } N_1 = \{(1.96 \sqrt{(0.4 \cdot 0.6 [1+1/1])} + 1.28 \sqrt{(0.27 \cdot 0.73 +$$

$$[0.53 \cdot 0.47/1])\}^2 / 0.26^2. \text{ Meaning } N_1 = 73, \text{ and } N_2 = 73, N_3 = 73. \text{ Where, } N_1 \text{ is nurses' arm sample size, } N_2 \text{ is community arm sample size, } N_3 \text{ is control arm sample size. With a 10\%}$$

loss; $N_1 = 73 + 8 = 81, N_2 = 73 + 8 = 81$ and $N_3 = 73 + 8 = 81$ totalling to 243. For practical equal sample distribution, the actual sample size shall be 246. Each setting, rural and urban, setting shall therefore recruit 123 pregnant mothers who meet the eligibility criteria thus each study facility had 41 clients.

3.6 Sampling Technique

Multistage sampling was applied where the sub counties were purposive sampled. cluster sampling for the intervention and control facilities, and simple random sampling for the subjects. One sub county was purposively sampled by the researcher with a rural-urban mix.

Cluster random sampling was then used to get the two facilities allocated to each arm with one facility allocated to rural and periurban sites per arm. The facilities were matched based on the operational level. Each client meeting the criteria was then randomly assigned to the study using simple random sampling by picking folded paper labelled “yes” or “no”. There was no blinding as the intervention facilities and controls are known.

3.7 Intervention procedure

The intervention was targeted information provision on PPFP methods with emphasis on eligibility during early postpartum period based on WHO MEC for contraceptives using a standardized mobile phonebased tool. The intervention was administered once during the second or third trimesters of pregnancy. The service providers at the facility and CHPs for the community arm were trained on antenatal PPFP information provision prior to recruitment (Appendix 11). To standardize the training to all

(Appendix 12), pre and post test

(Appendix 13) was administered and the implementers were expected to get at least 60% in post-test for then them to be brought on board as study implementers. Their post-test score was included in the analysis to rule it out as a confounder.

The study nurses in all the arms did the recruitment of clients by a thorough history- taking and carrying out physical assessment. The nurse then filled in the case report form. T

he control group was under routine antenatal care after recruitment. The study nurse or CHP used a standardized tool of Medical Eligibility Criteria that has been embedded in the teaching tool to deliver the intervention. Each session was standardized to at least 20 minutes for it to be considered adequate information provision.

All the clients were then undertaken through the exit interview and informed about the last follow-up interview which was between 14 to 16 weeks postpartum.

There was no concomitant care or intervention that was recommended or prohibited during the trial that had not been contemplated in the exclusion criteria.

Clients were discontinued from the study if they lost their only sexual partner, the only sexual partner underwent vasectomy in the course of pregnancy, the client developed postpartum psychosis, and was hospitalized for more than 14 weeks postpartum.

3.8 Data Collection Procedure

Five tools were used for data collection, namely, client exit interview guide, case report form, appointment card, site appraisal form and questionnaire. All the tools were used to collect quantitative data except site appraisal form and some questions in the questionnaire that need brief explanation.

3.8.1 Development of Instruments

The Theory of Planned Behaviour was applied to design the tools. Phone based (Kobo Collect) Case Report Forms

(CRFs) was used in recruitment of clients to the study. These CRFs had study's eligibility criteria, client's biodata, past and current obstetric information of the client, and past and present medical history of the client.

Client exit interview guide and Site appraisal form were developed based on the procedures set out in the counselling guide and the overall set up of the counselling session. Appointment card was source of information on client details, proposed date for PPFP initiation and vital PPFP information summary.

The other quantitative data collection tool was questionnaire administered during postpartum follow up

(Appendix 14). The questionnaire was tailored to the recommendations of Francis *et al.*, 2004 and Ajzen and Klobas 2013 (Ajzen & Klobas, 2013; Francis *et al.*, 2004).

The tools were piloted in advance with an appropriate sample of service providers, CHPs and mock clients from the pilot sites before finalizing the forms.

3.8.2 Data Collection

Figure 3.2 shows how the flow of the study including acceptance rates for those sampled. Each health centre and community unit had a trained research assistant. The assistant ensured adherence to the study manual and standard operating procedures for data management. The primary outcomes were the intent to use early PPFP and the actual uptake of FP methods at three months postpartum. Actual uptake of modern contraceptive method was established three months postpartum between the 14th to 16th weeks after birth. The CRFs were filled on recruitment by the trained ANC service provider. The appointment card was filled by the counsellor after the client has accepted to set postnatal follow up date for PPFP. The questionnaire was filled at 14 weeks postpartum during the scheduled MCH visit by a trained enumerator or thereafter.

A process evaluation was undertaken with the objectives of understanding the barriers and enablers related to the delivery of PPFP. This was evaluated based on client exit interviews and site appraisal forms. The client exit interview guide and site visit appraisal form were used to assess the process quality indicators which included: waiting time, time/ trimester of start of FP counselling, time after FP counselling, group/ individual session, availability of teaching aid on the table during counselling, gauging FP information level, application of GATHER (Greet, Ask, Tell, Help, Explain and Return/

Refer) Model and BRAIDED

(Benefits, Risks, Alternatives, Inquiries, Decision, Explanation, Documentation) Model.

Satisfaction with information given, the responses to questions, respectful care, confidentiality and privacy. Client exit interviews were done by trained enumerator immediately after the intervention has been administered to reduce recall bias by the client. Site appraisal form was filled on site visits by the research team and on the part of enumerator was filled each day to include workload for ANC, number of staff available to offer ANC services, availability of FP counselling bag and flipchart.

Study flow diagram

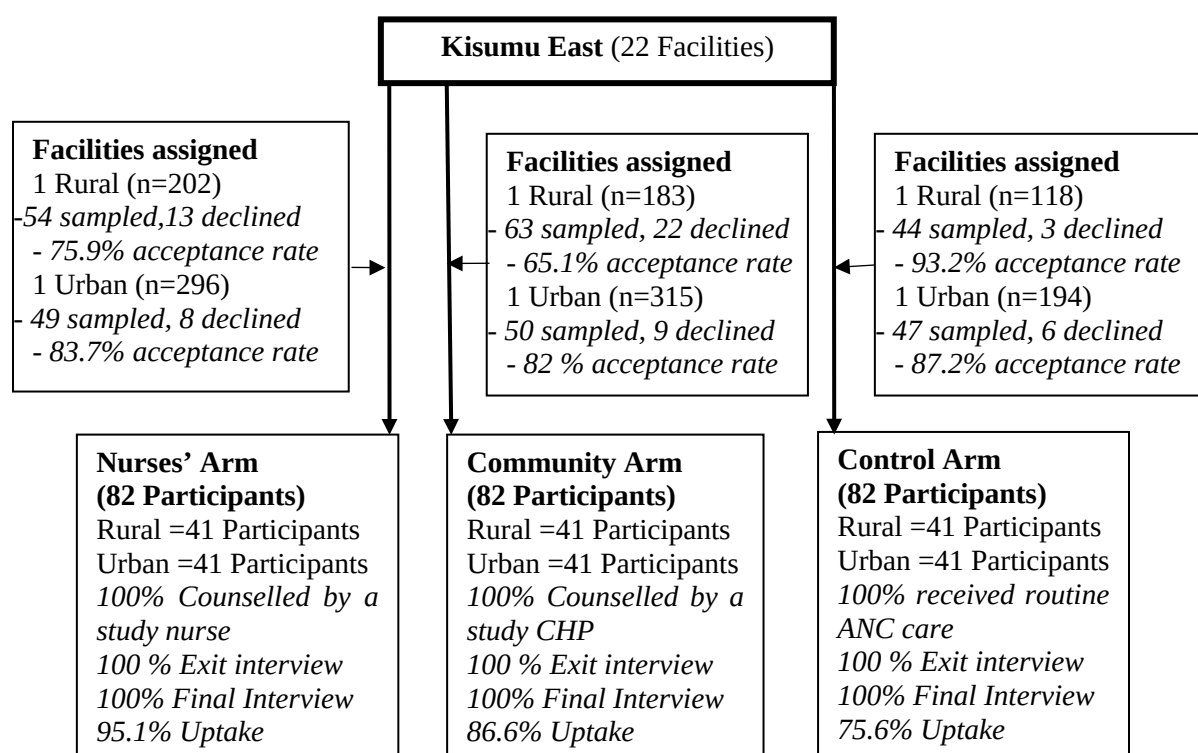


Figure 3. 2: Trial Profile

3.8.3 Validity

The study population has been clearly described with a clear inclusion and exclusion criteria, and probability sampling used to ensure representative sample thus findings are generalizable to the rest of the population.

Construct validity has been assured by adapting a questionnaire from previously published peer reviewed research on FP and adopting questions from TPB official testing platforms by the theory proponents.

Content validity has been assured through hinging the data collection tools to a conceptual framework developed from established behavioural theory, TPB. The theory informed and captured key aspects of intention and has been used before in FP research.

3.8.4 Reliability

The consistency of actual application of the tools and methods of this research were ensured by the researcher using thoroughly trained data collectors. This strengthened interrater reliability by reducing chances diversity introduced by the data collectors. Implementation integrity and fidelity of the antenatal PFP information provision package were ensured by providing an initial training to service providers and CHPs of the study sites (Appendix 15). There was continuous monitoring and supportive supervision of the sites to safeguard adherence to the intervention package. The researcher held fortnight meetings with the study teams to detect any deviations from the protocol and address them early enough. An action plan was drawn and implemented to ascertain if there were any concerns regarding fidelity to the intervention package. The information reported on the CRFs checked for accuracy and completeness several times at different levels by field coordinators/data managers.

Internal consistency was ensured by piloting the tools and refining them to ensure they capture the essence of what they were meant to collect and Cronbach's alpha of 0.7 was acceptable.

Lastly construct reliability was assessed using Cronbach's Alpha. Cronbach Alpha for each construct in the study was above the required limit of 0.70 (Nunnally & Bernstein, 1994; Ursachi *et al.*, 2015).

3.9 Data management

The data was password protected: only authorized users were allowed access to the data. In addition, the collected information was stored safely; hardcopies have been stored in lockable cabinets and soft copies were secured by password. Data transmission was

encrypted to ensure data integrity and confidentiality of participants. The data was exported from Kobo Collect into MS Excel, data cleaning was done in Excel and the imported into SPSS version 26 for data analysis.

3.9.1 Variables in the study

Independent variables in the study were divided into the following categories: participants' characteristics, process characteristics and Theory of Planned Behaviour (TPB) Constructs up to intention. The dependent variable (primary outcome variable) was the utilization of early PPFP.

Participants characteristics comprised sociodemographic characteristics, current obstetric history, comorbidities, previous FP history, pregnancy, birth, and postnatal related aspects, and intimate partner relationships.

Process characteristics included general process aspects, process fidelity and quality of counselling services. General process aspects comprised; client setting an appointment date for PPFP, waiting time for PPFP counselling in minutes, counselling turnaround time in minutes, mode of counselling (whether group or individual), follow-up period in months, and counsellor score in post-test of FP refresher training.

TPB has five constructs which can be subdivided into exogenous variables (independent variables excluding intention), mediating variable (intention) and outcome variable or target behaviour (early PPFP uptake). The exogenous variable includes perceived normative beliefs about target behaviour, perceived individual control of behavioural choice, and attitude towards the target behaviour. The mediating variable was intention towards target behaviour, for this study intention to use early PPFP.

3.9.2 Measurement of variables

Each of the variables; participants' characteristics, previous experience with FP, intimate partner relationship, process related aspects and the TPB constructs (both adopted and core constructs) were measured using distinct parameters.

The following socio demographic characteristics of the clients were recorded during recruitment; location of facility of where client attended ANC, age of client, marital status, level of education, employment status, monthly income, comorbidity, birth history, number of ANC visits, last monthly period, expected date of delivery and physical assessment findings. Natal and postnatal findings such as date of delivery, delivery complications, treatment of complications, method of PPF utilized if any and side effects of PPF experienced were recorded during postnatal interview and corroborated with notes in the mother-child booklet. Intimate partner relationship aspects like physical and sexual violence aspects was assessed using 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The questions assessed for physical violence in relationship, psychological violence, sexual violence and partner engagement on FP issues. overall rating of good intimate partner relationship was summarized into an ordinal scale based on level of agreement (strongly disagree – 1 to strongly disagree – 7). The rating was attained by averaging the score of all the parameters of participant partner relationship score thus strongly agree was (7), agree (≥ 6 , < 7), moderately agree (≥ 5 , < 6), neither disagree nor agree (≥ 4 , < 5), moderately disagree (≥ 3 , < 4), disagree (≥ 2 , < 3), and strongly disagree (≥ 1 , < 2).

Process characteristics were assessed by staff's score in post-test, client waiting time, counselling process turnaround time, counselling process quality measurement, self-assessed fidelity to process, and client setting a postnatal appointment date for PPFP. Staff's percentage score in post-test, client waiting time, counselling process turnaround time, client satisfaction were continuous variables while self-rated fidelity to the process was ordinal scales based on a 7-point Likert scale. Fidelity was measured by five Likert scale questions ranging from strongly disagree (1) to strongly agree (7) that were scored by the person administering the counselling. These indicators were averaged to get an ordinal score for individual counsellor rating of their fidelity to the process. Therefore, fidelity to the process was rated as follows; very high fidelity (7), high fidelity (≥ 6 , < 7), moderately high fidelity (≥ 5 , < 6), neither high nor low high fidelity (≥ 4 , < 5), moderately low fidelity (≥ 3 , < 4), low fidelity (≥ 2 , < 3), and very low fidelity (≥ 1 , < 2). Quality was assessed by "Yes" or "No" as to whether what was embedded in the counselling process was adhered to.

TPB model constructs were perceived normative beliefs on early PPFP, attitude towards early PPFP, behaviour control of PPFP choice, PPFP intention, and uptake of PPFP in the early postpartum period.

TPB constructs were measured using an adapted and validated manual for studying TPB by Francis *et al.*, 2004 (Francis *et al.*, 2004). The primary outcome, uptake of PPFP in the early postpartum period (Objective 1), was measured during postpartum follow-up at or after 14 weeks post-delivery by asking the participants if they had started FP. Attitude towards early PPFP (objective 2) was directly measured using four 7-point Likert scale (Cronbach's alpha 0.844) ranging from strongly agree (7) to strongly disagree (1). Attitude was then summarized into a continuous variable by calculating the mean score of

parameter Likert scores. The mean scores were scaled to classify attitude as follows; very negative attitude (≥ 1 , < 2); moderate negative attitude (≥ 2 , < 3); weak negative attitude (≥ 3 , < 4); neutral attitude (≥ 4 , < 5); weak positive attitude (≥ 5 , < 6); moderate positive attitude (≥ 6 , < 7) and very positive attitude (≤ 7). Perceived normative beliefs (objective 3) on early PPFP was directly measured using five 7-point Likert scale paired variables (Cronbach's alpha 0.807) ranging from strongly agree (7) to strongly disagree (1). Perceived normative beliefs was then summarized into a continuous variable by calculating the mean score of parameter Likert scores. The mean scores were scaled to classify perceived normative beliefs as follows; very positive (7), positive (≥ 6 < 7), moderately positive (≥ 5 < 6), neither positive nor negative (≥ 4 < 5), moderately negative (≥ 3 < 4), negative (≥ 2 < 3), and very negative (≥ 1 < 2). Behavioural control (Objective 4) was measured by three 7-point Likert scale questions (Cronbach's alpha 0.779) ranging from strongly agree (7) to strongly disagree (1). Behavioural control was then summarized into a continuous variable by calculating the mean score of parameter Likert scores. The mean scores were scaled to classify perceived behavioural control as follows; very high (7), high (≥ 6 < 7), moderately high (≥ 5 < 6), neither high nor low (≥ 4 < 5), moderately low (≥ 3 < 4), low (≥ 2 < 3), and very low (≥ 1 < 2). Intention to use early PPFP (Objective 5) was directly determined by three 7-point level Likert scale questions (Cronbach's alpha 0.850) ranging from strongly agree (7) to strongly disagree (1). Intention was then summarized into a continuous variable by calculating the mean score of parameter Likert scores. The mean scores were scaled to classify intention as follows; very high intention ($= 7$), high intention (≥ 6 , < 7), moderately high intention (≥ 5 , < 6), neither high nor low high intention (≥ 4 , < 5), moderately low intention (≥ 3 , < 4), low intention (≥ 2 , < 3), and very low intention (≥ 1 , < 2). Objective 6:

This objective was measured by all the data collected from the client characteristics, system characteristics to the constructs of TPB as measured above.

3.10 Analysis

The analysis flows as follows; summary of participants' characteristics, primary outcome assessment disaggregated per study arm (objective 1), analysis of specific objectives 2, 3, 4, 5, and 6, respectively. As much as variable were classified as dependent and independent at the broader outlook of the study, during the analysis, some of the variables were assessed for moderating effect on each other. As such, the moderating effect of participants' characteristics and process aspects on the exogenous and mediating constructs of TPB was assessed.

3.10.1 Participants' characteristics

Participants' characteristics such as age, residence, level of education, income, obstetric history, comorbidities, birth history, previous FP history and pregnancy and birth complications were summarized in frequency tables. Continuous variables were assessed for measures of central tendencies and categorical variables summarized into proportions. Group homogeneity was assessed by bivariate analysis of the primary outcome based on sociodemographic characteristics.

3.10.2 Process characteristics

The intervention process and direct outputs of the process were also summarized in terms of general process aspects such as if client wants to set an appointment date for PPFP, waiting time for PPFP counselling (Minutes), counselling turnaround (Minutes), mode of counselling, follow-up period (Months) and counsellor score in post-test. Other process

related aspects assessed were fidelity to counselling procedure, and quality of counselling. These process related aspects were assessed using Liker scale indicators thus converted to continuous variables and summarized into descriptive statistics for continuous variables. Later the variables were regrouped into ordinal characteristics which were then summarized into frequency tables.

Waiting time for PFP counselling (Minutes), counselling turnaround (Minutes), mode of counselling, follow-up period (Months) and counsellor score in post-test and process related aspects assessed were fidelity to counselling procedure, and quality of counselling were taken through analysis of variance (ANOVA) with post hoc test for between study arms. Tukey's post hoc test was used for those variables which had homogeneity of variance (Levene's test $P > 0.05$), and Brown-Forsythe adjusted ANOVA test result was reported for those which did not fulfil homogeneity of variance (Levene's test $P < 0.05$) and Tamhane's post hoc test was used for difference between arms. Partial η^2 was used to ascertain effect size. Mode of counselling and accepting to set postnatal appointment being binary in nature were analyzed in bivariate manner for difference between study arms with Chi-square statistic as test statistic. Odds Ratio (OR), 95% confidence interval (CI) were used for strength of relationship while Phi and Cramer's V symmetry measure was used to ascertain effect size.

The process characteristics were then assessed as predictors of uptake in bivariate analysis with Chi-square as the test statistic. This was the selection criteria for those to include in the final binary regression model analysis of predictors of uptake. Therefore, the results at bivariate analysis level were not interpreted as the final test of predictors of early PFP uptake.

3.10.3 Objective 1: Early PPFP uptake among participants

The primary outcome (early postpartum uptake of PPFP) was assessed for the difference between arm and effect size. The outcome variable being binary, bivariate group comparisons was done with Odds Ratios (OR) as measure of strength of heterogeneity in proportions and P value with 95% confidence interval as measures of significance of intergroup differences in proportions. Phi and Cramer's V was used to ascertain effect size.

Distribution of uptake on sociodemographic characteristics was done using bivariate analysis. This was the selection criteria for those to include in the final binary regression model analysis of predictors of uptake. Therefore, the results at bivariate analysis level were not interpreted as the final test of predictors of early PPFP uptake.

3.10.4 Objective 2: Attitude towards early PPFP among study participants

Individual attitude towards PPFP was assessed using Likert scale parameters and overall rating converted into a continuous variable by computing mean score of measurement parameters. These were summarized into frequency tables and measures of central tendency and dispersion. Individual attitude was then converted to 7-point Likert scale variable as detailed in measurement of constructs of TPB section. It was then fitted in an ordinal logistic regression analysis with characteristics of the participants and process indicators.

Individual attitude towards PPFP was taken through analysis of variance (ANOVA) with post hoc test for difference in means between study arms. Tukey's post hoc test was used for those variables which had homogeneity of variance (Levene's test $p > 0.05$) and Brown-

Forsythe adjusted ANOVA test result was reported for those which did not fulfil homogeneity of variance (Levene's test $P < 0.05$), and Tamhane's post hoc test was used for difference between arms. Partial η^2 was used to ascertain effect size.

PPFP uptake was then summarized per individual attitude grouping in bivariate analysis with Chi-square as the test statistic. This was the selection criteria for those to include in the final binary regression model analysis of predictors of uptake. Therefore, the results at bivariate analysis level were not interpreted as the final test of predictors of early PPFP uptake.

3.10.5 Objective 3: Perceived social normative beliefs on early PPFP in Kisumu County

Overall perceived social normative beliefs on PPFP was converted into a continuous variable by getting mean score of the Likert scale scores for each parameter. Social normative beliefs were then summarized in frequency tables and measures of central tendency and dispersion. Social normative beliefs were then converted to a scaled variable which was fitted in an ordinal logistic regression analysis with sociodemographic characteristics of the participants and process indicators to assess the effect of these characteristics on perceived social normative beliefs.

Perceived social normative beliefs towards early PPFP was taken through analysis of variance (ANOVA) with post hoc test for difference in means between study arms. Tukey's post hoc test was used for those variables which had homogeneity of variance (Levene's test $p > 0.05$) and Brown-Forsythe adjusted ANOVA test result was reported for those which did not fulfil homogeneity of variance (Levene's test $P < 0.05$) and Tamhane's post

hoc test was used for difference between arms. Partial η^2 was used to ascertain effect size.

PPFP uptake was then summarized per individual attitude grouping in bivariate analysis with Chi-square as the test statistic. This was the selection criteria for those to include in the final binary regression model analysis of predictors of uptake. Therefore, the results at bivariate analysis level were not interpreted as the final test of predictors of early PPFP uptake.

3.10.6 Objective 4: Perceived individual control of early PPFP choice among study participants

Perceived individual control of PPFP choice was assessed using Likert scale questions and summarized into a continuous variable which was later converted into an ordinal scale. Before conversion to scale the findings of perceived individual control of PPFP choice were summarized into descriptive statistics for continuous variable. The ordinal scale for perceived individual control was then fitted in an ordinal regression analysis with sociodemographic characteristics of the participants and process indicators to assess the effect of these characteristics on perceived individual control.

Perceived individual control of PPFP choice was taken through analysis of variance (ANOVA) with post hoc test for difference in means between study arms. Tukey's post hoc test was used for those variables which had homogeneity of variance (Levene's test $P > 0.05$), and Brown-Forsythe adjusted ANOVA test result was reported for those which did not fulfil homogeneity of variance (Levene's test $P < 0.05$), and Tamhane's post hoc test was used for difference between arms. Partial η^2 was used to ascertain effect size.

PPFP uptake was then summarized per Perceived individual control of PPFP choice grouping in bivariate analysis with Chi-square as the test statistic. This was the selection criteria for those to include in the final binary regression model analysis of predictors of uptake. Therefore, the results at bivariate analysis level were not interpreted as the final test of predictors of early PPFP uptake.

3.10.7 Objective 5: Intention for early PPFP use among participants

Intention to use early PPFP was assessed using Likert scale questions and summarized into a continuous variable which was later converted into an ordinal scale. Before conversion to scale the findings of intention to use early PPFP were summarized into descriptive statistics. The ordinal scale for intention was then fitted in an ordinal regression analysis with sociodemographic characteristics of the participants and process indicators to assess the effect of these characteristics on intention.

Intention for early PPFP use was taken through analysis of variance (ANOVA) with Tukey's post hoc test for difference in means between study arms difference. Tukey's post hoc test was used because intention for early PPFP had homogeneity of variance (Levene's test $P > 0.05$). Partial η^2 was used to ascertain effect size.

PPFP uptake was then summarized per intention grouping in bivariate analysis with Chi-square as the test statistic. This was the selection criteria for those to include in the final binary regression model analysis of predictors of uptake. Therefore, the results at bivariate analysis level were not interpreted as the final test of predictors of early PPFP uptake.

Moderation effect of sociodemographic factors, process factors and quality of counselling, intimate partner relationship on the optimized model was assessed ordinal regression

analysis. The sociodemographic aspects assessed were age, residence, education level, income, employment status. Residence, education level and employment status were converted to ranked order based on the trends established in the KDHS 2022 (KNBS, 2022b). There was an increase in utilization of FP as age, level of education, income quantiles increased and those who were employed and those who lived in urban areas had higher FP utilization rates as compared to their counterparts. Therefore, marital status was assigned ranks as follows; never married “1”, separated “2” and married “3”. Level of education was assigned ranks as; no education and primary level education “1”, secondary education “2” and tertiary level education “3”. Employment status was assigned as follows; not employed “1”, housewife “2” self-employed “3” and formally employed “4”. Quality of counselling was based on 7-point Likert scale self-score on counselling process fidelity and client FP knowledge. Process factors were; staff score on counselling refresher training post-test (Appendices 14-16), counselling waiting time and counselling turnaround time. Intimate partner relationship rating was assessed by Likert scale scoring for physical, sexual violence, and partner support willingness to be involved in FP decisions making.

3.10.8 Objective 6: Determinants of early PPFP uptake in Kisumu County

Chi-square statistics was used as the inclusion criteria for binary logistic regression analysis. Thus, the participants’ characteristics, previous experience with FP, intimate partner relationship, process related aspects and the TPB constructs (both adopted and core constructs) which had a significant relationship with early PPFP uptake in the bivariate analysis were included in the final binary logistic regression analysis to determine the predictors of uptake in the whole group of participants.

3.11 Ethical Considerations

The recommendations by “The Ottawa Statement on the Ethical Design and Conduct of Randomized Trials” were considered in designing the trial. The study was approved by Masinde Muliro University of Science and Technology (MMUST) School of Graduate Studies (SGS) (Ref: MMU/COR:509099) (Appendix 16). Ethical clearance was obtained from the MMUST Institutional Ethics Review Committee (IERC) (MMUST/IERC/013/2021) (Appendix 17). A research authorization and permit was acquired from NACOSTI (Ref. No. 522628) (Appendix 18). An official data collection permission letter was obtained from the county Director of Medical Services (DMS) (Appendix 19). The trial was registered with the Pan African Clinical Trial Registry (PACTR) PACTR202109586388973 (Appendix 20). Signed written informed consent was obtained from all participants after they were introduced to the purpose of the study and informed about their rights. To ensure confidentiality and privacy, the names of the participants were not recorded in the CRFs, and data collection was in privacy. Principle of justice and impartiality was adhered to by enabling equal opportunity of the target population to participate in the study by use of probability sampling. Likewise, refresher training was conducted for the nurses offering antenatal care services to the clients in both the intervention and control arms and guidelines provided for uniformity of the process. The information generated from this study has been disseminated through scientific conferences, policy briefs, and publication in peer-reviewed journals (Appendix 21).

CHAPTER FOUR

FINDINGS

4.1 Overview

The findings of this study flow as follows; participants' characteristics, primary outcome assessment disaggregated per study arm and location of the implementing facility (objective 1). The other specific objectives 2, 3, 4, 5 and 6 are based on the core constructs of TPB (predictors of behaviour) and have been analyzed and reported from how they were rated using constructs specific parameters, then predictors of each construct have been analyzed in an ordinal regression analysis and summary per study arm. The influence of study interventions on each construct rating have been analyzed using the ANOVA with a post hoc test for effect size. Predictors of utilization among participants (objective 6) have been assessed in a binary logistic regression.

4.2 Analysis of the participants' characteristics

Participants' sociodemographic characteristics, current obstetric history, comorbidities, previous FP history, pregnancy and birth complications and intimate partner relationships have been summarized in frequency tables and charts. Continuous variables have been assessed for measures of central tendencies and categorical variables summarized into proportions.

4.2.1 Sociodemographic characteristics of participants

Table 4.1 shows the descriptive analysis of the sociodemographic characteristics of the participants including age, marital status, level of education, employment status, average monthly income and religion. The distribution of these aspects across study arms has been shown for comparison purpose. Mean age was 25.2 years (SD 4.9) was grouped into 3

groups with intra-cluster range of 10 years with a minimum age of 16 years and a maximum of 42 years. The modal age group was 15-24 years. Most (84.1%) of the participants were married. The highest attained level of education for the participants was tertiary and more than 63% of the participants had attained high school or tertiary education. More than 86% of the participants and almost all the participants earned less than 5000 KES and were Christians, respectively.

Table 4. 1: Sociodemographic characteristics of the client per study arm

Sociodemographic characteristics		Study Arm			Total, N (%)
		Nurses', N (%)	Community , N (%)	Control , N (%)	
Age group (Years)	15-24	43(33.1)	45(34.6)	42(32.3)	130(52.8)
	25-34	35(35.0)	32(32.0)	33(33.0)	100(40.7)
	35-44	4(25.0)	5(31.3)	7(43.8)	16(6.5)
Marital status	Not married	16(41.0)	10(25.6)	13(33.3)	39(15.9)
	Married	66(31.9)	72(34.8)	69(33.3)	207(84.1)
Level of education	None	1(100.0)	0(0.0)	0(0.0)	1(0.4)
	Primary	32(35.6)	27(30.0)	31(34.4)	90(36.6)
	Secondary	39(33.1)	39(33.1)	40(33.9)	118(48.0)
	Tertiary	10(27.0)	16(43.2)	11(29.7)	37(15.0)
Employment status	Not employed	34(44.2)	28(36.4)	15(19.5)	77(31.3)
	Housewife	17(18.3)	34(36.6)	42(45.2)	93(37.8)
	Self employed	25(41.0)	15(24.6)	21(34.4)	61(24.8)
	Formal employment	6(40.0)	5(33.3)	4(26.7)	15(6.1)
Income	<5000	67(31.5)	73(34.3)	73(34.3)	213(86.6)
	5000-10000	8(42.1)	5(26.3)	6(31.6)	19(7.7)
	>10000	7(50.0)	4(28.6)	3(21.4)	14(5.7)
Religion	Christian	81(33.2)	82(33.6)	81(33.2)	244(99.2)
	Muslim	1(50.0)	0(0.0)	1(50.0)	2(0.8)

Cross-tabulation of Sociodemographic characteristics with study arm. N (%) where N is frequency, % is proportion.

4.2.2 Participants' current obstetric history

Table 4.2 displays participants' current obstetric history and comorbidities, ANC visits, trimester when client was counselled on FP, status of diastolic BP in the current pregnancy, comorbidity in the current pregnancy, comorbidity type, number of children, number children per sex category, interbirth interval, status of previous birth and complications of current pregnancy. Most of the participants had done at least 4 ANC visits (81.7%) with an average 4.5 (SD=1.4) and 70.3% were enrolled in the third trimester (gestation in weeks) with average enrolment being 31 weeks' gestation, (SD=4.3). A big majority (94.3%) had a normal diastolic BP with remaining having either borderline (2.8%) or high (2.8%) diastolic BP. About 5% of the participants had comorbidity with HIV being the commonest (2.4%). Most of the participants had other children (65.9%) of which 39% had boys and 42.3% had girls. A majority of the participants with a history of previous pregnancy (76.1%) had at least 24 months of interbirth interval ($M=40$, $SD=24.6$).

Routinely, clients are usually health educated on different pregnancy, labour, delivery, post-delivery and childcare practices. Two hundred and thirty-six (95.9%) of the participants were health educated during pregnancy on the following topics: breast feeding 84.6%, pregnancy care 89%, need for skilled birth attendance 74%, danger signs in pregnancy 85.4%, care of new born 68.3%, birth plan 69.5% and postpartum FP 76.4%.

Fifty-two clients (21.1%) had reported having complications in the current pregnancy. The complications reported were preterm labour 3 (4.5%), infection 21 (31.8%), severe headache 2 (3.1%), severe backache 9 (13.6%), excessive vomiting, 11 (16.7%), anaemia 3 (4.5%), high blood pressure 13 (19.7%), and bleeding 4 (6.1). Some 57.7% of those who

had complications during pregnancy were treated as outpatient, 36.5% were admitted and 5.8% were counselled about their problem.

Table 4. 2: Participants current obstetric history characteristics per study arm

4.2.3 Labour, delivery and post-delivery aspects of the participants

Participants current obstetric characteristics		Study Arm			Total, N(%)
		Nurses', N(%)	Community, N(%)	Control, N(%)	
ANC Visits	>=4	74(36.8)	73(36.3)	54(26.9)	201(81.7)
	<4	8(17.8)	9(20.0)	28(62.2)	45(18.3)
Diastolic BP	Normal	74(31.9)	81(34.9)	77(33.2)	232(94.4)
	Borderline	5(71.4)	1(14.3)	1(14.3)	7(2.8)
	High	3(42.9)	0(0.0)	4(57.1)	7(2.8)
Comorbidity	None	73(31.2)	81(34.6)	80(34.2)	234(95.2)
	Asthma	2(66.7)	1(33.3)	0(0)	3(1.2)
	HIV	5(83.3)	0(0.0)	1(16.7)	6(2.4)
	Hypertension	2(66.7)	0(0.0)	1(33.3)	3(1.2)
Number of Children Group	>=3	20(47.6)	11(26.2)	11(26.2)	42(17.1)
	1-2	42(35.0)	40(33.3)	38(31.7)	120(48.8)
	0	20(23.8)	31(36.9)	33(39.3)	84(34.1)
Number female children	None	38(26.8)	49(34.5)	55(38.7)	142(57.7)
	1	28(38.4)	23(31.5)	22(30.1)	73(29.7)
	>1	16(51.6)	10(32.3)	5(16.1)	31(12.6)
Number male children	None	47(31.3)	50(33.3)	53(35.3)	150(61.0)
	1	16(28.1)	19(33.3)	22(38.6)	57(23.2)
	>1	19(48.7)	13(33.3)	7(17.9)	39(15.8)
Interbirth Interval (Months)	This is first pregnancy	20(23.0)	32(36.8)	35(40.2)	87(35.4)
	>=24 Months	47(38.8)	37(30.6)	37(30.6)	121(49.2)
	<24 Months	15(39.5)	13(34.2)	10(26.3)	38(15.4)
Status of previous birth	None	20(23.0)	32(36.8)	35(40.2)	87(35.4)
	Normal	57(37.5)	49(32.2)	46(30.3)	152(61.8)
	Caesarean	5(71.4)	1(14.3)	1(14.3)	7(2.8)
Trimester when the client was counselled	Second	17(23.3)	24(32.9)	32(43.8)	73(29.7)
	Third	65(37.6)	58(33.5)	50(28.9)	173(70.3)
Complication during pregnancy	Yes	13(25.0)	24(46.2)	15(28.8)	52(21.1)
	No	69(35.6)	58(29.9)	67(34.5)	194(78.9)
Health educated during pregnancy	Yes	82(34.7)	80(33.9)	74(31.4)	236(95.9)
	No	0(0.0)	2(20.0)	8(80.0)	10(4.1)
Topic of health education during pregnancy	Breast feeding	78(37.5)	64(30.8)	66(31.7)	208(84.6)
	Pregnancy care	78(35.6)	73(33.3)	68(31.1)	219(89)
	Need for SBA	77(42.3)	54(29.7)	51(28)	182(74)
	Pregnancy danger signs	79(37.6)	70(33.3)	61(29)	210(85.4)
	Care of new-born	72(42.9)	52(31)	44(26.2)	168(68.3)
	Birth Plan	70(40.9)	53(31)	48(28.1)	171(69.5)
	Postpartum FP	79(42.0)	63(33.5)	46(24.5)	188(76.4)
Main Source of ANC Health Messages	CHP	55(65.5)	21(25)	8(9.5)	84(34.1)
	Facility Health worker	27(18.4)	57(38.8)	63(42.9)	147(59.8)
	Mass media	0(0.0)	1(100.0)	0(0.0)	1(0.4)
	Relatives and friends	0(0.0)	1(25.0)	3(75.0)	4(1.6)

Table 4. 3: Labour, delivery and post-delivery aspects of the participants

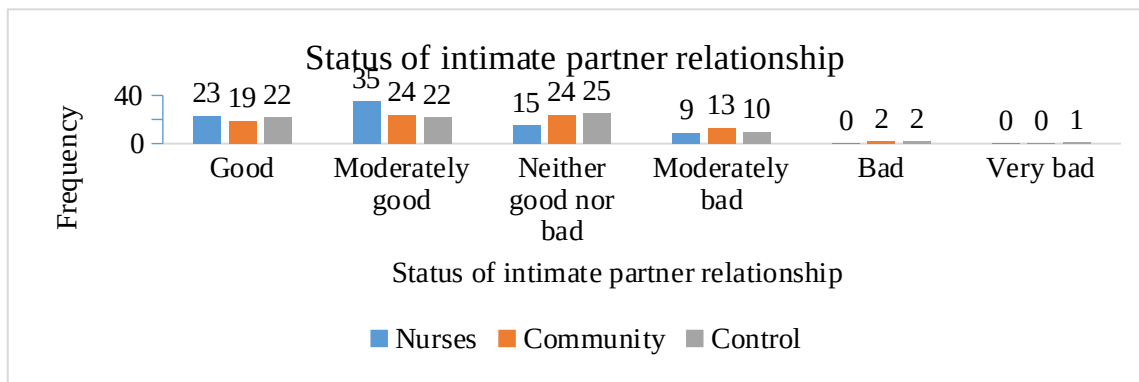
Labour, delivery and post-delivery aspects of the participants		Study Arm			Total, N (%)
		Nurses' , N (%)	Community, N (%)	Control , N (%)	
Place of deliver	Home	0(0.0)	1(33.3)	2(66.7)	3(1.3)
	Hospital	82(34.5)	81(34.0)	75(31.5)	238(96.7)
	TBA	0(0.0)	0(0.0)	5(100.0)	5(2.0)
Place of delivery	Link facility	76(41.3)	55(29.9)	53(28.8)	184(74.8)
	Not Link facility	6(11.1)	26(48.1)	22(40.7)	54(22.0)
Rating Labour	Very Normal	14(35)	9(22.5)	17(42.5)	40(16.3)
	Normal	58(39.2)	49(33.1)	41(27.7)	148(60.2)
	Somehow Normal	4(23.5)	4(23.5)	9(52.9)	17(6.9)
	Neither normal nor difficult	0(0.0)	1(100.0)	0(0.0)	1(0.4)
	Somehow Difficult	3(12.0)	11(44.0)	11(44.0)	25(10.2)
	Difficult	2(33.3)	3(50)	1(16.7)	6(2.4)
Labour was complicated	Yes	6(14.6)	20(48.8)	15(36.6)	41(16.7)
	No	76(37.1)	62(30.2)	67(32.7)	205(83.3)
Complication in Labour	Prolonged labour	2(12.5)	7(43.8)	7(43.8)	16(42.1)
	Difficult labour	2(25.0)	3(37.5)	3(37.5)	8(21.1)
	Early Breaking of water	0(0.0)	2(50.0)	2(50.0)	4(10.5)
	Infection	0(0.0)	0(0.0)	2(100.0)	2(5.3)
Delivery	Poorly lying baby	2(22.2)	6(66.7)	1(11.1)	9(23.7)
	Assisted	3(20.0)	6(40.0)	6(40.0)	15(6.1)
	Caesarean	5(20.0)	14(56.0)	6(24.0)	25(10.2)
	Normal	74(35.9)	62(30.1)	70(34)	206(83.7)
Postpartum complication	Yes	3(12.5)	15(62.5)	6(25)	24(9.8)
	No	79(35.6)	67(30.2)	76(34.2)	222(90.2)
Type of postpartum complication	Excess Bleeding	0(0.0)	3(75.0)	1(25.0)	4(18.2)
	Infection	0(0.0)	1(25.0)	3(75.0)	4(18.2)
	Breast Complications	0(0.0)	3(60.0)	2(40.0)	5(22.7)
	Urine leakage	0(0.0)	0(0.0)	2(100.0)	2(8.7)
	Psychological	1(9.1)	8(72.7)	2(18.2)	11(47.8)
Outcome of birth	Baby died after birth	0(0.0)	0(0.0)	1(100.0)	1(0.4)
	Live baby in NBU	1(7.1)	6(42.9)	7(50.0)	14(5.7)

	Live healthy baby	81(35.2)	76(33)	73(31.7)	230(93.5)
	Still birth	0(0.0)	0(0.0)	1(100.0)	1(0.4)
Exclusive breast feeding	Yes	77(33.6)	80(34.9)	72(31.4)	229(93.9)
	No	5(33.3)	2(13.3)	8(53.3)	15(6.1)
Health education after birth	Yes	82(38.7)	76(35.8)	54(25.5)	212(86.2)
	No	0(0.0)	6(17.6)	28(82.4)	34(13.8)
Topics of Health education after birth	Breast feeding	81(39.5)	72(35.1)	52(25.4)	205(83.3)
	New-born care	81(40.9)	71(35.9)	46(23.2)	198(80.5)
	Family planning	81(43.8)	60(32.4)	44(23.8)	185(75.2)
	Self-care	75(41.0)	66(36.1)	42(23))	183(74.4)
Health status After pregnancy	Good	82(35.8)	80(34.9)	67(29.3)	229(93.1)
	Bad	0(0.0)	2(11.8)	15(88.2)	17(6.9)

Cross-tabulation of labour, delivery and post-delivery aspects with study arm. N (%) where N is frequency, % is proportion. TBA is Traditional Birth Attendance. NBU is Newborn Unit.

4.2.4 Participants' intimate partner relationship

Intimate partner relationship quality was evaluated using five 7-point Likert scale questions, each ranging from strongly disagree (1) to strongly agree (7). These questions assessed the presence of physical, psychological, and sexual violence, as well as partner engagement on family planning (FP) issues. The responses were averaged across all



questions to generate an overall score, which was recoded into an ordinal scale from "very bad" (1) to "very good" (7). This scale categorized relationship quality as follows: "very

good" (7), "good" (≥ 6 , < 7), "moderately good" (≥ 5 , < 6), "neither good nor bad" (≥ 4 , < 5), "moderately bad" (≥ 3 , < 4), "bad" (≥ 2 , < 3), and "very bad" (≥ 1 , < 2). The range of scores for intimate partner relationship was 1.8 to 6.8 with an average of 5.1 (SD=1.0). Intimate partner relationship was rated as shown in Figure 4.1. Among the 246 participants, a substantial portion reported positive intimate partner relationships, with 26% rating their relationships as "good" and 32.9% as "moderately good." Smaller percentages rated their relationships negatively, with 1.6% labelling them as "bad" and only 0.4% as "very bad." Overall, "good" and "moderately good" were the most common responses, indicating generally positive relationship perceptions among participants.

Figure 4. 1: Intimate partner relationship

4.3 Process Characteristics

Process indicators comprised setting of postnatal appointment, waiting time before counselling, turnaround time for the counselling procedure, mode of counselling (whether individual or group counselling), counsellor score in post-test, fidelity to counselling procedure, and counselling quality. Except for appointment setting and whether the participant was counselled in a group or individually, the other aspects were continuous variables. The nurses' arm had an average waiting time of 14.0 minutes (SD = 5.1), the community arm had 28.0 minutes (SD = 11.8), and the Control Arm had 20.5 minutes (SD = 10.0). The overall average waiting time for PPFPP counselling across all study arms was 20.9 minutes (SD = 11.0). The nurses' arm had an average counselling turnaround time of 13.8 minutes (SD = 2.7), the community arm had 26.5 minutes (SD = 7.7), and the control arm had 21.1 minutes (SD = 2.8). The overall average counselling turnaround time across all study arms was 20.4 minutes (SD = 7.2). For service provider post-test score, the

nurses' arm had an average score of 77.3 (SD = 2.8), the community arm had 78.2 (SD = 6.2), and the control arm had 74.2 (SD = 5.7). The overall average service provider post-test score across all study arms was 76.6 (SD = 5.4). The nurses' arm had a mean fidelity score of 6.6 (SD = 0.7), the community arm had a mean score of 6.3 (SD = 0.7), and the Control Arm had a mean score of 5.9 (SD = 1.0). Across all study arms, the total mean fidelity score was 6.3 (SD = 0.9). The nurses' arm had a mean counselling quality score of 95.1 (SD = 5.2), the community arm had a mean score of 93.1 (SD = 7.6), and the Control Arm had a mean score of 83.3 (SD = 9.5). Across all study arms, the total mean counselling quality score was 90.5 (SD = 9.2).

ANOVA for waiting time for PPFPP counselling, counselling turnaround time, counsellor's score in post-test, level of fidelity to counselling process, and quality of counselling was done as shown in Table 4.4. Levene's test showed that homogeneity of variance was not met for the five aspects; waiting time $F(2,243) = 6.0$, $P=0.003$, counselling turnaround time $F(2,243) = 51.4$, $P<0.0001$, service provider post-test score $F(2,243) = 43.5$, $P<0.0001$, level of fidelity to counselling process $F(2,243) = 8.1$, $P<0.0001$, and quality of counselling $F(2,243) = 11.2$, $P<0.0001$ thus Brown-Forsythe adjusted ANOVA used for interpretation and Tamhane's post hoc test used to estimate effect sizes between arms.

The ANOVA for waiting time and study arms revealed a significant difference in mean waiting time $F(2,189.6)=46.2$, $P<0.0001$ with Tamhane's post hoc test showing significantly more waiting time for community and control arms compared to nurses' arm ($P<0.0001$ for both cases) and more waiting time for community arm as compared to control arm ($P<0.0001$).

Equally for the counselling turnaround time, community arm had significantly $F(2,123.3) = 133.4, P < 0.0001$) highest mean turnaround time (26.5 minutes) followed by control arm (21.1) and finally the nurses' arm (14.0 minutes). Tamhane's post hoc test showed a significant difference ($P < 0.0001$) in means of turnaround time between all the arms with medium to large effect size.

There was a significant difference in means between arms for service provider's post-test $F(2,192.6) = 13.3$, $P < 0.0001$ however, the Tamhane's post hoc test only revealed a significant difference between the intervention arms and control arm but not between the two intervention arms themselves.

The ANOVA for fidelity to the process and study arms revealed a significant difference in the mean fidelity scores between arms $F(2,216.0) = 11.8$, $P < 0.0001$ with Tamhane's post hoc test showing significantly more fidelity to process between nurses' arm and community arm ($P = 0.049$) and control arms ($P < 0.0001$) and between community arm and control arm ($P = 0.034$) with a small to medium effect size.

ANOVA showed a significant difference in the mean counselling quality percentage between arms $F(2,202.8) = 56.2$, $P < 0.0001$ with Tamhane's post hoc test showing significantly more quality between nurses' arm and control arm ($P < 0.0001$), and community arm and control arm ($P < 0.0001$). There was no significant difference between the intervention arms themselves ($P = 0.163$).

Table 4. 4: ANOVA of process characteristics and study arm

Process Aspect	Study arm		MD (A-B)	95% CI	P Value	Effect size
	A	B				
Waiting time for PPFPP counselling	Intervention	Control	0.5	-2.5 - 3.4	0.756	0.00
	Nurses'	Community	-14.1	-17.5 - -10.6	<0.0001	0.38
	Nurses'	Control	-6.6	-9.6 - -3.6	<0.0001	0.15
	Community	Control	7.5	3.4- 11.6	<0.0001	0.11
Counselling turnaround time	Intervention	Control	-0.9	-2.9 – 1.0	0.342	0.01
	Nurses'	Community	-12.7	-14.9 - -10.5	<0.0001	0.55
	Nurses'	Control	-7.3	-8.3 - -6.2	<0.0001	0.64
	Community	Control	5.4	3.2 - 7.6	<0.0001	0.18
Service provider post-test score	Intervention	Control	3.5	2.2-4.9	<0.0001	0.10
	Nurses'	Community	-0.8	-2.7 – 1.0	0.615	0.01
	Nurses'	Control	3.1	1.4 - 4.8	<0.0001	0.11
	Community	Control	4	1.7 - 6.2	<0.0001	0.10
Fidelity to process	Intervention	Control	0.5	0.3 - 0.7	<0.0001	0.07
	Nurses'	Community	0.3	0.1 - 0.5	0.017	0.04
	Nurses'	Control	0.6	0.4 - 0.9	<0.0001	0.12
	Community	Control	0.4	0.1 - 0.6	0.011	0.04
Counselling quality	Intervention	Control	10.8	8.8-12.8	<0.0001	0.31
	Nurses'	Community	1.9	-0.5 - 4.4	0.163	0.02
	Nurses'	Control	11.8	8.9 - 14.7	<0.0001	0.38
	Community	Control	9.8	6.6 - 13.1	<0.0001	0.26

A and B are column labels. MD is Mean Difference between A and B. 95% CI is the Confidence Interval for the Mean Difference (MD). ANOVA of process characteristics between study arms was done, effect size was estimated by partial eta² (0.01 to <0.06 - small, 0.06 to <0.14 medium, ≥0.14 Large). Tamhane's post hoc test was applied because homogeneity of variance was met. Significance set at P≤0.05.

Bivariate analysis of study arm and mode of counselling demonstrated a significantly, (OR:0.04; 95% CI:0.02 - 0.09, $P<0.0001$), higher percentage of group counselling sessions between control (85.4%) versus overall intervention arm (19.5%) and control versus individual arms; nurses' (19.5%) (OR: 0.02; 95% CI: 0.0-0.1; $P<0.0001$) and community arms (19.5%) (OR:0.1; 95% CI:0.0 - 0.1; $P<0.0001$) as shown in Table 4.5. There was no significant difference in the mode of counselling between the community arm and the control arms.

Cross-tabulation of study arm and setting postnatal appointment was done. There was a significantly higher percentage (86%) of participants in the intervention arm accepting set a postnatal appointment compared to those in control (67.1%) (OR:3.0; 95% CI:1.6 – 5.7; P=0.001) with a 22.1% effect size. Likewise, nurses' (91.5%) versus control arm (67.1%) and nurses' versus community arm (80.5%) portrayed a significant difference in proportion in accepting to set postnatal PPFP appointment, (R:5.3; 95% CI:2.1 – 13.0, P<0.0001) and (OR:2.6; 95% CI:1.0 - 6.7; P=0.043), respectively. There was no significant difference between the community arm and the control arm.

Table 4. 5: Mode of counselling and setting postnatal appointment per study arm

Study arm	Mode of counselling		OR	95% CI	P Value	Effect size
	Group, N(%)	Individual, N(%)				
Intervention vs Control arm	32 (19.5) 70 (85.4)	132 (80.5) 12 (14.6)	0.1	0.0 - 0.1	<0.0001	0.63
Nurses' vs Control arm	16 (19.5) 70 (85.4)	66 (80.5) 12 (14.6)	0.1	0.0 - 0.09	<0.0001	0.66
Nurses' vs Community arm	16 (19.5) 16 (19.5)	66 (80.5) 66 (80.5)	1	0.5 - 2.2	1.000	0.0
Community vs Control arm	16 (19.5) 70 (85.4)	66 (80.5) 12 (14.6)	0.1	0 - 0.1	<0.0001	0.66
Study arm	Set Postnatal Appointment for PPFP		OR	95% CI	P Value	Effect size
	Yes, N(%)	No, N(%)				
Intervention vs Control arm	141 (86) 55 (67.1)	23 (14) 27 (32.9)	3.0	1.6-5.7	0.001	0.22
Nurses' vs Control arm	75 (91.5) 55 (67.1)	7 (8.5) 27 (32.9)	5.3	2.1-13.0	<0.0001	0.30
Nurses' vs Community arm	75 (91.5) 66 (80.5)	7 (8.5) 16 (19.5)	2.6	1.01 - 6.7	0.043	0.15
Community vs Control arm	66 (80.5) 55 (67.1)	16 (19.5) 27 (32.9)	2.0	0.99 - 4.14	0.051	0.15

Cross-tabulation between study arm and mode of counselling and setting postnatal appointment was done with Chi-square statistics used as inferential statistics. Effect size was estimated by the Phi & Cramer's V symmetry measure (0- no relationship, <0.2 weak, 0.2-0.3 moderate and >0.3 strong. N (%) where N is frequency, % is proportion, Significance set at P≤0.05.

4.4 Objective 1: Early PPFP uptake among participants

The primary outcome, early postpartum uptake of PPFP, was assessed by ascertaining commencement rates of FP by 3 months postpartum. The distribution of uptake has been reported per location and study arms. Differences in early PPFP uptake between study arms and effect size were assessed for using Chi-square statistics. The influence of sociodemographic, obstetric history, previous FP history, intimate partner relationship, and process related aspects on uptake were assessed during the earlier analysis of each of these factors. The types of PPFP used have been reported including side effects experienced by the participants.

4.4.1 Commencement of early PPFP across study arm

Table 4.6 shows how the distribution of the primary outcome, early postpartum uptake of PPFP, has been cross tabulated with study arms. The overall use of early PPFP is 85.8%. Study arms in the rural facilities realized higher PPFP commencement rates (90.2%) compared to the urban setting arm (81.3%). Intervention arm had higher PPFP commencement rates (90.9%) than the control group (75.6%). Nurses' arm showed higher rates of commencement (95.1%) as compared to control and community arms (86.6%). Equally, community arm had higher proportions (86.6%) of participants starting early PPFP than control arm (75.6%).

Table 4. 6: Commencement of early PPFP across study arm

Study arm characteristic		Commenced FP		Total
		Yes, N (%)	No, N (%)	
Total Participants	N=246 (%)	211(85.8)	35 (14.2)	256(100)
Location	Urban	100 (81.3)	23 (18.7)	123 (50)
	Rural	111 (90.2)	12 (9.8)	123 (50)
Intervention arm vs control	Intervention	149 (90.9)	15 (9.1)	164 (66.7)
	Control	62 (75.6)	20 (24.4)	82 (33.3)
Total		211 (85.8)	35 (14.2)	246 (100)
Nurses' arm vs Control arm	Nurses'	78 (95.1)	4 (4.9)	82 (33.3)
	Control	62 (75.6)	20 (24.4)	82 (33.3)
Total		140 (85.4)	24 (14.6)	164 (66.7)
Nurses' arm vs Community arm	Nurses'	78 (95.1)	4 (4.9)	82 (33.3)
	Community	71 (86.6)	11 (13.4)	82 (33.3)
Total		149 (90.9)	15 (9.1)	164 (66.7)
Community arm vs control arm	Community	71 (86.6)	11 (13.4)	82 (33.3)
	Control	62 (75.6)	20 (24.4)	82 (33.3)
Total		133 (81.1)	31 (18.9)	164 (66.7)

Cross-tabulation of study arm characteristics with early PPFP uptake. N (%) where N is frequency, % is proportion.

4.4.2 Comparing early PPFP uptake between study groups

The primary outcome variable (early PPFP uptake) being a binary variable, bivariate group comparisons was done with Odds Ratios with 95% confidence interval as measure of strength of heterogeneity in proportions and P Value as measures of significance of intergroup differences in proportions. Cramer's V was used to estimate the effect size. Table 4.7 shows that there was a significant higher percentage of uptake of early PPFP participants in the intervention arm (90.9%) as compared to those in control arm (75.6%) in early PPFP uptake. Those participants in the intervention arm had more than three-fold odds of using early PPFP as compared to those in the control arm (OR:3.2; 95% CI:1.5-6.7; $P<0.0001$). Similarly, those participants in facilities within rural (90.2%) and those in the nurses' (95.1%) arm had significantly higher odds of utilizing early PPFP, OR:2.1; 95% CI:1.0-4.5; $P=0.045$, and OR:6.3; 95% CI: 2.0-19.4; $P<0.0001$ correspondingly, than their counterpart in urban facilities (81.3%) and control arms (75.6%), respectively. There was a borderline difference in early PPFP uptake between nurses' arm (95.1%) and

community arm (86.6%), (OR:3.0; 95% CI: 1.0-9.9; P=0.051) while community arm did not portray significant difference with control arm (OR:2.1;95% CI: 1.0-4.7; P=0.073). However, there was a three-times chance that participants in the nurses' arm would use early PPFP than those in community arm and there were 2-fold odds of participants in community arm using early PPFP as compared to participants in the control arm.

Table 4. 7: Comparison of Early PPFP uptake between study groups

Study arm	Commenced FP		OR	95% CI	P Value	Effect size
	Yes, N (%)	No, N (%)				
Rural	111 (90.2)	12 (9.8)	2.1	1.0-4.5	0.045	0.13
Urban	100 (81.3)	23 (18.7)				
Intervention	149 (90.9)	15 (9.1)	3.2	1.5-6.7	<0.0001	0.21
Control	62 (75.6)	20 (24.4)				
Nurses'	78 (95.1)	4 (4.9)	6.3	2.0-19.4	<0.0001	0.28
Control	62 (75.6)	20 (24.4)				
Nurses'	78 (95.1)	4 (4.9)	3.0	0.9-9.9	0.051*	0.15
Community	71 (86.6)	11 (13.4)				
Community	71 (86.6)	11 (13.4)	2.1	0.9-4.7	0.073	0.14
Control	62 (75.6)	20 (24.4)				

*Cross-tabulation of study arm and commencement of early PPFP. Chi-square statistics was used as the inferential statistics. Effect size was estimated by the Phi & Cramer's V symmetry measure (0- no relationship, <0.2 weak, 0.2-0.3 moderate and >0.3 strong. *Fisher's exact test used for interpretation otherwise Pearson Chi-square was used, Significance set at $P \leq 0.05$.*

4.4.3 Types of PPFP methods used by the participants

Figure 4.2 shows that more than 70% of the participants opted for hormonal methods: Implant (36%), injection Depot Medroxyprogesterone Acetate (DMPA) (19%), and oral pills (16.1%). Barrier methods (9.5%) came in second after the hormonal methods and IUDs came third (8.1%). The rest of the methods accounted for 11.4% of the uptake.

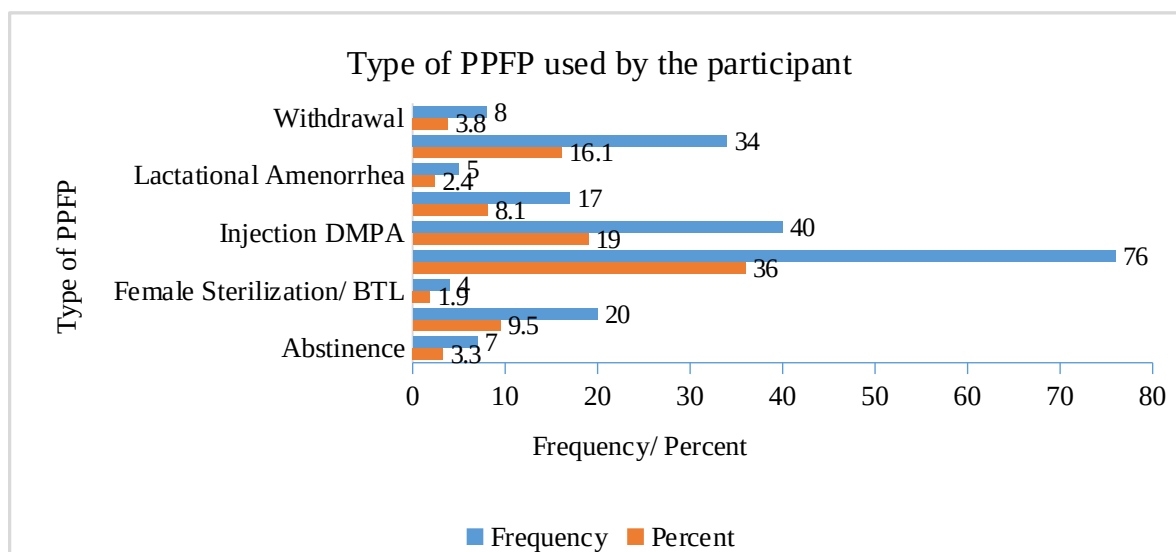
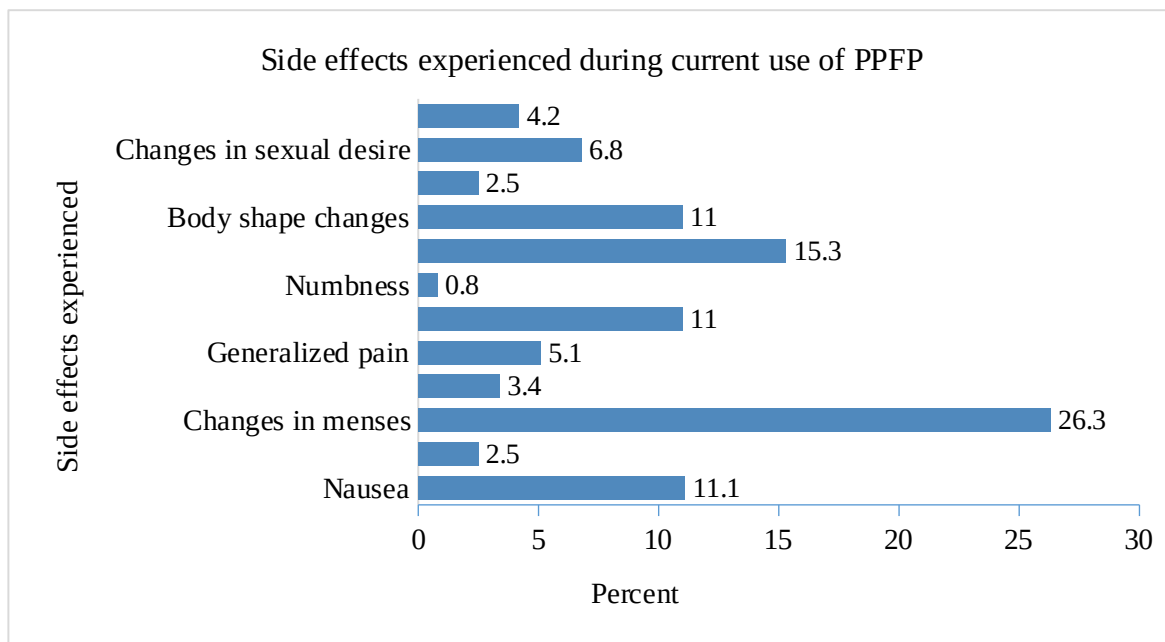


Figure 4. 2: Types of PPFP used by the participants

4.4.4 Side effects experienced during current use of PPFP

Figure 4.3 shows the proportions of those who experienced side effects during the current use of PPFP. Those who experienced side effects after using PPFP were about 26%. Changes in menses was the commonest side effect (26.3%) reported by the participants who used PPFP followed by backache (15.3%). The least reported side effect was numbness (0.8%). Other side effects were mood swings, changes in sexual desire, muscle aches, headache, loss of appetite, generalized pain, nausea and constipation. About 21% of those who experienced side effects talked to a professional and 20.7% were offered solution for the FP side effect of which only 21% were satisfied with the solution provided by the HCW.

Figure 4. 3: Side effects experienced during current use of PPFP



4.4.5 Participants' characteristics and early PPFP uptake

This section reports the analysis of participants' characteristics as predictors of early PPFP uptake. The participants' characteristics have been disaggregated into sociodemographic, Participants' current obstetric history, labour, delivery and post-delivery aspects, and intimate partner relationship. It is worth noting that the analysis in this section is serves as a selection criterion for variables showing significant relationship with uptake for inclusion in the final regression model of determinants of early PPFP uptake.

4.4.5.1 Sociodemographic characteristics and early PPFP uptake

Table 4.8 shows the bivariate analysis of the primary outcome with sociodemographic characteristics was carried out with Chi-square statistic for assessment of homogeneity of proportions. Employment status and monthly income had significant relationship ($P < 0.05$) with commencement of early PPFP.

Table 4. 8: Participants' sociodemographic characteristics early PPFP uptake

Sociodemographic characteristics		Commenced FP		Total N (%)	X^2	df	P Value
		Yes, N (%)	No, N (%)				
Age group	15-24	111 (85.4)	19 (14.6)	130 (52.8)	2.9	2	0.231
	25-34	84 (84.0)	16 (16.0)	100 (40.7)			
	35-44	16 (100.0)	0 (0.0)	16 (6.5)			
Marital status	Never married	35 (89.7)	4 (10.3)	39 (15.9)	1	2	0.612
	Married	176 (85.0)	31 (15.0)	207 (84.1)			
Level of education	Primary	81 (89.0)	10 (11.0)	91 (37.0)	3.9	2	0.141
	Secondary	102 (86.4)	16 (13.6)	118 (48.0)			
	Tertiary	28 (75.7)	9 (24.3)	37 (15.0)			
Employment status	Not employed	71 (92.2)	6 (7.8)	77 (31.3)	8.7	3	0.033
	Housewife	76 (81.7)	17 (18.3)	93 (37.8)			
	Self-employed	54 (88.5)	7 (11.5)	61 (24.8)			
	Formal	10 (66.7)	5 (33.3)	15 (6.1)			
Income	<5000	187 (87.8)	26 (12.2)	213 (86.6)	6.7	2	0.034
	5000-10000	15 (78.9)	4 (21.1)	19 (7.7)			
	>10000	9 (64.3)	5 (35.7)	14 (5.7)			
Religion	Christian	209 (85.7)	35 (14.3)	244 (99.2)	0.3	1	0.735
	Muslim	2 (100.0)	0 (0.0)	2 (0.8)			

X^2 is Chi-square statistic, df is Degrees of Freedom. N (%) where N is frequency, % is proportion; Significance set at $P \leq 0.05$.

4.4.5.2 Participants' current obstetric history and early PPFP uptake

Table 4.9 is a representation of the bivariate analysis of the primary outcome (commencement of PPFP) and participants' current obstetric history was carried out. Only the number of children and being health educated during pregnancy portrayed a significant relationship ($P < 0.05$) with early use of PPFP.

Table 4. 9: Participants' current obstetric history and early PPFP uptake

Current obstetric characteristics		Commenced FP		Total, N (%)	X ²	d f	P Value
		Yes, N (%)	No, N (%)				
Number of ANC Visits	<4	38 (84.4)	7 (15.6)	45 (18.3)	0.1	1	0.778
	>=4	173 (86.1)	28 (13.9)	201 (81.7)			
Trimester counselled on PPFP	Second	65 (89.0)	8 (11.0)	73 (29.7)	0.9	1	0.34
	Third	146 (84.4)	27 (15.6)	173 (70.3)			
Diastolic BP	Normal	198 (85.3)	34 (14.7)	232 (94.3)	1.2	2	0.55
	Borderline	7 (100.0)	0 (0.0)	7 (2.8)			
	High	6 (85.7)	1 (14.3)	7 (2.8)			
Comorbidity	Yes	11 (91.7)	1 (8.3)	12 (4.9)	0.4	1	0.549
	No	200 (85.5)	34 (14.5)	234 (95.1)			
Number of Children Group	>=3	41 (97.6)	1 (2.4)	42 (17.1)	7.3	2	0.026
	1-2	97 (80.8)	23 (19.2)	120 (48.8)			
	0	73 (86.9)	11 (13.1)	84 (34.1)			
Status of previous birth	None	73 (83.9)	14 (16.1)	87 (35.4)	1.4	2	0.489
	Normal	131 (86.2)	21 (13.8)	152 (61.8)			
	Caesarean	7 (100)	0 (0)	7 (2.8)			
Number male children	None	130 (86.7)	20 (13.3)	150 (61)	3.6	2	0.162
	One	45 (78.9)	12 (21.1)	57 (23.2)			
	>1	36 (92.3)	3 (7.7)	39 (15.9)			
Number female children	None	117 (82.4)	25 (17.6)	142 (57.7)	4.6	2	0.099
	One	64 (87.7)	9 (12.3)	73 (29.7)			
	>1	30 (96.8)	1 (3.2)	31 (12.6)			
Interbirth interval grouping (Months)	>=24	104 (86)	17 (14)	121 (76.1)	0.3	1	0.576
	<24	34 (89.5)	4 (10.5)	38 (23.9)			
Client health educated in pregnancy	No	4 (40)	6 (60)	10 (100)	5.7	1	0.017
	Yes	31 (13.1)	205 (86.9)	236 (100)			

Complication during pregnancy	No	29 (14.9)	165 (85.1)	194 (100)	0.4	1	0.532
	Yes	6 (11.5)	46 (88.5)	52 (100)			

X^2 is Chi-square statistic, df is Degrees of Freedom, N (%) where N is frequency, % is proportion, significance set at $P \leq 0.05$.

4.4.5.3 Labour, delivery and post-delivery aspects and early PPFP utilization

Table 4.10 represents the bivariate analysis of labour, delivery and post-delivery aspects of participants and their commencement of early PPFP. None of the aspects portrayed a significant relationship with early PPFP use.

Table 4. 10: Labour, delivery and post-delivery aspects with PPFP utilization

Labour, delivery and post-delivery aspects		Commenced FP		Total N (%)	X^2	Df	P Value
		Yes, N (%)	No, N (%)				
Labour was complicated	Yes	37 (90.2)	4 (9.8)	41 (16.7)	0.8	1	.369
	No	174 (84.9)	31 (15.1)	205 (83.3)			
	Total	211 (85.8)	35 (14.2)	246 (100)			
Postpartum complication	No	189 (85.1)	33 (14.9)	222 (90.2)	0.8	1	.384
	Yes	22 (91.7)	2 (8.3)	24 (9.8)			
	Total	211 (85.8)	35 (14.2)	246 (100)			
Health education after birth	No	28 (82.4)	6 (17.6)	34 (13.8)	0.4	1	.539
	Yes	183 (86.3)	29 (13.7)	212 (86.2)			
	Total	211 (85.8)	35 (14.2)	246 (100)			
Health status After pregnancy	Good	198 (86.5)	31 (13.5)	229 (93.1)	1.3	1	.255
	Bad	13 (76.5)	4 (23.5)	17 (6.9)			
	Total	211 (85.8)	35 (14.2)	246 (100)			
Health status 3 months postpartum	Good	196 (86.7)	30 (13.3)	226 (91.9)	2.1	1	.150
	Bad	15 (75.0)	5 (25.0)	20 (8.1)			
	Total	211 (85.8)	35 (14.2)	246 (100)			

X^2 is Chi-square statistic, df is Degrees of Freedom, N (%) where N is frequency, % is proportion, Significance set at $P \leq 0.05$.

4.4.5.5 Intimate partner relationship and early PPFP use

Bivariate analysis of participants' intimate partner relationship and early PPFP use showed a significant relationship, $X^2(5) = 37.0$, $P < 0.0001$ as demonstrated in Table 4.11.

Table 4. 11: Intimate partner relationship and early PPFP use

Intimate partner relationship	Commenced FP		Total N (%)	X ²	Df	P Value
	Yes, N (%)	No, N (%)				
Very bad	0 (0.0)	1 (100.0)	1 (0.4)	37.0	5	<0.0001
Bad	4 (100.0)	0 (0.0)	4 (1.6)			
Moderately bad	23 (71.9)	9 (28.1)	32 (13)			
Neither good nor bad	45 (70.3)	19 (29.7)	64 (26)			
Moderately good	76 (93.8)	5 (6.2)	81 (32.9)			
Good	63 (98.4)	1 (1.6)	64 (26)			

X² is Chi-square statistic, df is Degrees of Freedom, N (%) where N is frequency, % is proportion, Significance set at P≤0.05.

4.4.6 Process aspects and early PPFP uptake

Table 4.12 shows the outcome of cross-tabulation of process aspects and early PPFP uptake to ascertain effect of process variables on early PPFP uptake. There was a significant relationship between commencement of FP in early postnatal period and counselling turnaround time (P=0.012), service provider post-test score (P=0.032), mode of counselling (P<0.0001), and setting postnatal appointment (P=0.002). Fidelity to the process (P=0.059) and counselling quality (P=0.265) had no significant effect on commencement of early PPFP.

Table 4. 12: Process aspects and early PPFP use

General process aspects		Early PPFP Uptake		Total N (%)	X ²	d f	P Value
		Yes, N (%)	No, N (%)				
Waiting time	>=30 Minutes	50 (79.4)	13 (20.6)	63 (25.6)	2.8	1	0.091
	<30 Minutes	161 (88.0)	22 (12.0)	183 (74.4)			
Turnaround time	<20 Minutes	96 (93.2)	7 (6.8)	103 (41.9)	8.9	2	0.012
	> 30 Minutes	51 (83.6)	10 (16.4)	61 (24.8)			
	>=20& <30 Minutes	64 (78.0)	18 (22.0)	82 (33.3)			
Provider post test score	<= 70	35 (79.5)	9 (20.5)	44 (17.9)	6.9	2	0.032
	>70, <80	99 (82.5)	21 (17.5)	120 (48.8)			
	>=80%	77 (93.9)	5 (6.1)	82 (33.3)			
Mode of counselling	Group	78 (76.5)	24 (23.5)	102 (41.5)	12.4	1	<0.0001
	Individual	133 (92.4)	11 (7.6)	144 (58.5)			
Set PNA for PPFP	No	36 (72.0)	14 (28)	50 (20.3)	9.8	1	0.002
	Yes	175 (89.3)	21 (10.7)	196 (79.7)			
Fidelity to process	Moderately low	13 (92.9)	1 (7.1)	14 (5.7)	9.1	4	0.059
	Neither high nor low	3 (75.0)	1 (25.0)	4 (1.6)			
	Moderately high	21 (84.0)	4 (16.0)	25 (10.2)			
	High	135 (82.3)	29 (17.7)	164 (66.7)			
	Very high	39 (100.0)	0 (0.0)	39 (15.9)			
Counselling quality	<80	24 (80.0)	6 (20.0)	30 (12.2)	4	3	0.265
	>=80, <90	54 (80.6)	13 (19.4)	67 (27.2)			
	>=90, <100	83 (88.3)	11 (11.7)	94 (38.2)			
	100	50 (90.9)	5 (9.1)	55 (22.4)			

X² is Chi-square statistic, df is Degrees of Freedom, N (%) where N is frequency, % is proportion, PNA is Postnatal Appointment, Significance set at P≤0.05.

4.5 Objective 2: Attitude towards early PPFP among study participants

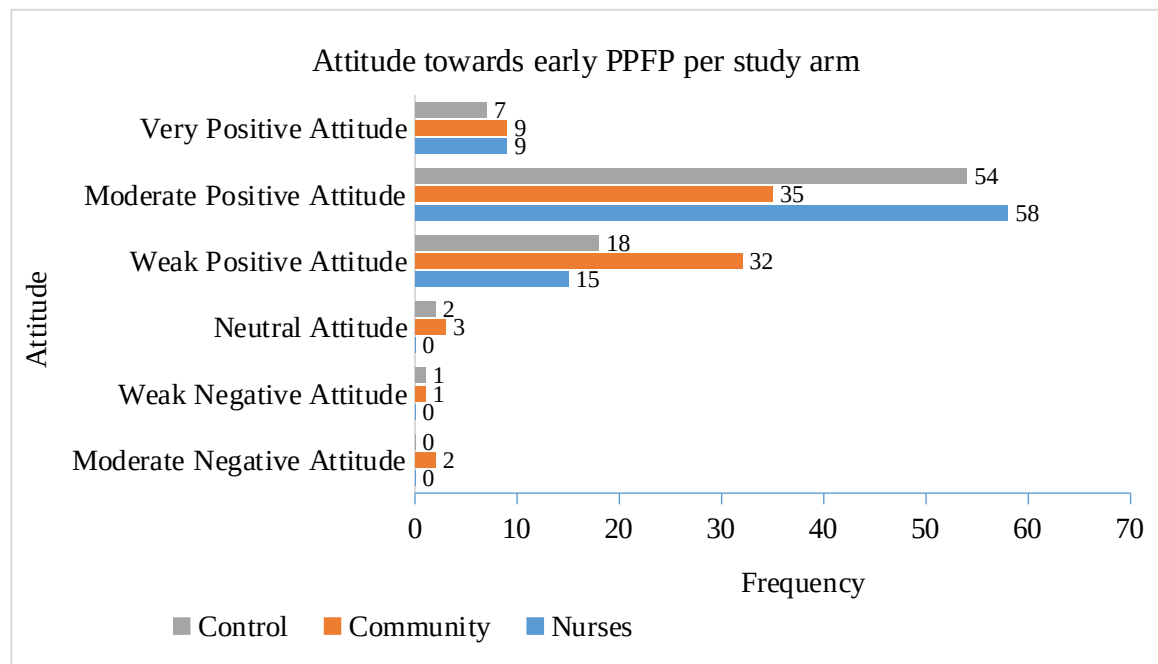
Attitude towards behaviour is one of the core constructs in the TPB, this was therefore assessed using four Likert scale parameters targeting attitude towards uptake, attitude towards recommended minimum of 24 months of interbirth spacing, role of early PPFP in attaining recommended interbirth spacing and side effects of PPFP.

Individual attitude towards PPFP was assessed using Likert scale indicators and overall rating was converted into a continuous variable by computing mean score of measurement parameters. These were summarized into frequency tables and measures of central tendency and dispersion. Overall attitude was converted into Likert scale as follows; very

negative attitude ($\geq 1, < 2$); moderate negative attitude ($\geq 2, < 3$); weak negative attitude ($\geq 3, < 4$); neutral attitude ($\geq 4, < 5$); weak positive attitude ($\geq 5, < 6$); moderate positive attitude ($\geq 6, < 7$) and very positive attitude (≤ 7). The average rating of attitude towards early PPFP was high 5.8 (SD=1.0).

Figure 4.4 shows that average attitude was skewed towards positive with 237 (96.4%) of the attitude being rated in the positive spectrum as follows; moderate positive attitude 147 (59.8%), weak positive attitude 65 (26.4%), and very positive attitude 25 (10.2%). The remaining 3.6% was accounted for by neutral attitude 2%, weak negative attitude 0.8% and moderate negative attitude 0.8%.

Figure 4. 4: Attitude towards early PPFP per study arm



4.5.1 Predictors of participants' attitude towards early PPFP

Table 4.13 shows the summary of ordinal regression analysis of individual attitude, a 7-point Likert scale variable, with client related aspects and counselling process aspects as

its predictors. Client related aspects were disaggregated into sociodemographic characteristics, pregnancy, labour and delivery aspects, previous FP experience, and intimate partner relationship. The 2022 KDHS demonstrated that there was an increase in utilization of FP as age, level of education, income quintiles increased and those who were employed and those who lived in urban areas had higher FP utilization rates as compared to their counterparts. These KDHS trends in utilization based on sociodemographic characteristics informed the decision to convert level of education, marital status and employment status groups into ranked variables. The groups with higher utilization based on KDHS 2022 utilization of FP were assigned a higher rank for example as level of education increased, there was increase in utilization of FP as per 2022 KDHS, therefore, primary level education would be assigned 1, secondary a “2” and tertiary a “3”. Counselling process indicators were mostly Likert scale (KNBS, 2022b).

The sociodemographic aspects fitted in the ordinal regression model were participants’ age, marital status, level of education, employment status, and monthly income. Only level of education had a significant effect on attitude towards early PPFP uptake. As level of education increased, the odds of having a positive attitude towards early PPFP decreased (OR:0.6, 95%CI: 0.4-0.9, P=0.026. Increase in age also had a similar but non-significant effect on attitude. Monthly income, marital status, and employment status portrayed a positive but non-significant effect on increasing the odds of a positive attitude towards early PPFP as their assigned ranks increased.

Pregnancy related aspects fitted in the ordinal regression analysis model were gestation when PPFP counselled, comorbidity, number of children, health education in pregnancy, and complication during pregnancy. Only comorbidity had a significant effect on attitude towards early PPFP uptake (OR:0.2, 95%CI: 0.1-0.6, P=0.006).

Labour, delivery and postpartum related aspects fitted in the ordinal logistic regression model were health education afterbirth, labour complications, postpartum complication, and health status in 3 months postpartum. Perceived health status of the participants' after pregnancy was the only significant determinant of attitude towards early PPFP. Those who rated their health as being good were more than three times likely to have a more positive attitude towards early PPFP than those who rated their post pregnancy health status as poor (OR:3.1,95% CI:1.0-9.2; P=0.043). Labour complications, postpartum complication, and health education afterbirth also had a positive impact on attitude even though not statistically significant.

Ordinal logistic regression analysis of rating previous experience with FP and estimated cost of previous FP services did not elicit any significant effect on attitude towards early PPFP utilization. However, they both had a positive effect on attitude towards PPFP.

As much as there was a positive relationship between intimate partner relationship and attitude towards early PPFP, the effect was not statistically significant (OR:1.1; 95% CI:0.9-1.4, P=0.485).

Process related aspects fitted in the ordinal regression model were FP counselling waiting time, counselling turnaround, mode of counselling, counselling quality, and fidelity to process. FP counselling waiting time had a borderline effect, and counselling turnaround

time had a significant effect on attitude towards early PPFP. As both counselling waiting time and turnaround time increased, there was reduction in odds of attitude towards PPFP (OR:0.9; 95% CI: 0.8-1.0, P=0.059) and (OR:0.9; 95% CI:0.9-1.0, P=0.032), respectively.

Table 4. 13: Predictors of participants' attitude towards early PPFP

Category	Parameter	OR	95% CI	P Value
Client related aspects	Clients Age	1.0	0.9 - 1.1	0.109
	Level of education	0.6	0.4 - 0.9	0.026
	Monthly income	1.3	0.7 - 2.3	0.365
	Marital status	1.1	0.7 - 1.6	0.753
	Employment status	1.3	0.9 - 1.9	0.109
	ANC visits number	1.0	0.8 - 1.3	0.798
	Gestation at recruitment	1.1	1.0 - 1.2	0.099
	Comorbidity	0.2	0.1 - 0.6	0.006
	Number of children	1.0	0.8 - 1.2	0.92
	Health education in pregnancy	1.5	0.4 - 5.5	0.485
	Complication during pregnancy	0.8	0.5 - 1.5	0.536
	Labour complications	1.1	0.5 - 2.4	0.824
	Postpartum complication	1.4	0.5 - 3.6	0.511
	Health education afterbirth	1.2	0.6 - 2.4	0.700
	Health status After pregnancy	3.1	1.0 - 9.2	0.043
	Health status 3 months postpartum	0.6	0.2 - 1.7	0.328
	Rating previous experience with FP	1.1	-8.6 - 1.1	0.816
	Estimated cost of previous FP services	1.2	-8.5 - 1.3	0.840
	Intimate partner relationship	1.1	0.9 - 1.4	0.485
Process related aspects	FP counselling waiting time	0.9	0.8 - 1.0	0.059
	FP Counselling turnaround	0.9	0.9 - 1.1	0.032
	Mode counselled	1.1	0.6 - 1.9	0.835
	Counselling Quality	1.0	0.9 - 1.1	0.104
	Fidelity to process	0.9	0.6 - 1.3	0.539
	Set postnatal appointment	1.2	0.6 - 2.3	0.579

Ordinal regression analysis of predictors of participant attitude towards early PPFP, OR- Odds Ratio, 95% CI – 95% confidence interval, Significance set at $P \leq 0.05$.

4.5.2 Effect of intervention on participants' attitude towards early PPFP

Table 4.14 shows the difference in distribution of attitude towards early PPFP per study arm which was assessed using ANOVA. A summary of descriptive statistics per arm was also done as a preamble to the main ANOVA test. Partial η^2 was used to estimate between arm effect size for ANOVA.

The nurses' arm had a mean attitude score of 5.9 (SD = 0.9), the community arm had a mean score of 5.6 (SD = 1.1), and the Control Arm had a mean score of 5.9 (SD =1.0). Across all study arms, the total mean attitude score towards PPFP was 5.8 (SD = 1.0).

One-way ANOVA for attitude towards PPFP was done with Levene's test showing that homogeneity of variance was met $F(2,243) = 1.0$, $P = 0.380$ thus Tukey's post hoc test would be used to estimate significance of mean difference, effect size between arms. The ANOVA for attitude towards PPFP and study arms revealed no significant difference in the mean attitude scores between arms $F(2,243) = 3.0$, $P = 0.053$ thus no need to interpret Tukey's post hoc test results.

Table 4. 14: ANOVA of attitude towards early PPFP between study arms

Study Arm		MD	95% CI	P Value	Effect size
A	B	(A-B)			
Intervention	Control	-0.2	-0.5 -0.1	0.106	0.01
Nurses'	Community	0.3	-0.1 - 0.7	0.167	0.02
Nurses'	Control	-0.1	-0.5 - 0.3	0.868	0.00
Community	Control	-0.4	-0.7 - 0.1	0.055	0.03

A and B are column labels, MD- Mean difference between A and B; 95% CI is the Confidence Interval for the Mean Difference (MD); Effect size was estimated by Partial η^2 (0.01 to <0.06 - Small, 0.06 to <0.14 medium, ≥ 0.14 Large); Tukey's post hoc test was applied because homogeneity of variance was met, Significance set at $P \leq 0.05$

4.5.3 Attitude towards early PPFP as a predictor of PPFP uptake

Postpartum FP uptake was then summarized per individual attitude grouping. Attitude toward PPFP was not a significant determinant of uptake of PPFP ($P = 0.601$) as shown in Table 4.15.

Table 4. 15: Attitude and early PPFP uptake

Attitude	Commenced FP		Total N (%)	X ²	df	P- value
	Yes, N (%)	No, N (%)				
Moderate Negative Attitude	1 (50.0)	1 (50.0)	2 (0.8)	5.5	5	0.353
Weak Negative Attitude	2 (100.0)	0 (0.0)	2 (0.8)			
Neutral Attitude	4 (80.0)	1 (20.0)	5 (2.0)			
Weak Positive Attitude	53 (81.5)	12 (18.5)	65 (26.4)			
Moderate Positive Attitude	131 (89.1)	16 (10.9)	147 (59.8)			
Very Positive Attitude	20 (80.0)	5 (20.0)	25 (10.2)			

X² is Chi-square statistic, df is Degrees of Freedom, N (%) when N is frequency, % is proportion, Significance set at P≤0.05.

4.6 Objective 3: Perceived social normative beliefs on early PPFP in Kisumu County

Perceived social normative beliefs is a key construct in TPB. This was assessed as a precursor of intention which is a direct determinant of behaviour (early PPFP use). This was assessed by five Likert scale parameters on social normative beliefs on use of FP, early PPFP use, social pressure on use, partner approval and partner openness about early PPFP.

Overall perceived social normative beliefs on PPFP was converted into a continuous variable by getting mean score of the Likert scale scores for each parameter. The mean of social normative beliefs was then calculated and used to classify perceived normative beliefs as follows; very positive (7), positive ($\geq 6 < 7$), moderately positive ($\geq 5 < 6$), neither positive nor negative ($\geq 4 < 5$), moderately negative ($\geq 3 < 4$), negative ($\geq 2 < 3$), and very negative ($\geq < 2$). Figure 4.5 is a summary of the Likert scale scores. Perceived normative beliefs about early PPFP were distributed across the whole spectrum from very negative perceived norm to very positive perceived norm. The average perceived norm was high 5.3 (SD=1.3). The participants had a preponderance towards positive normative beliefs

about early PPFP with 75.2% having either moderately positive (31.3%), positive (42.7%), or very positive (1.2%) perceived normative beliefs.

Figure 4. 5: Perceived social normative beliefs on early PPFP per study arm

4.6.1 Predictors of perceived social normative beliefs on early PPFP

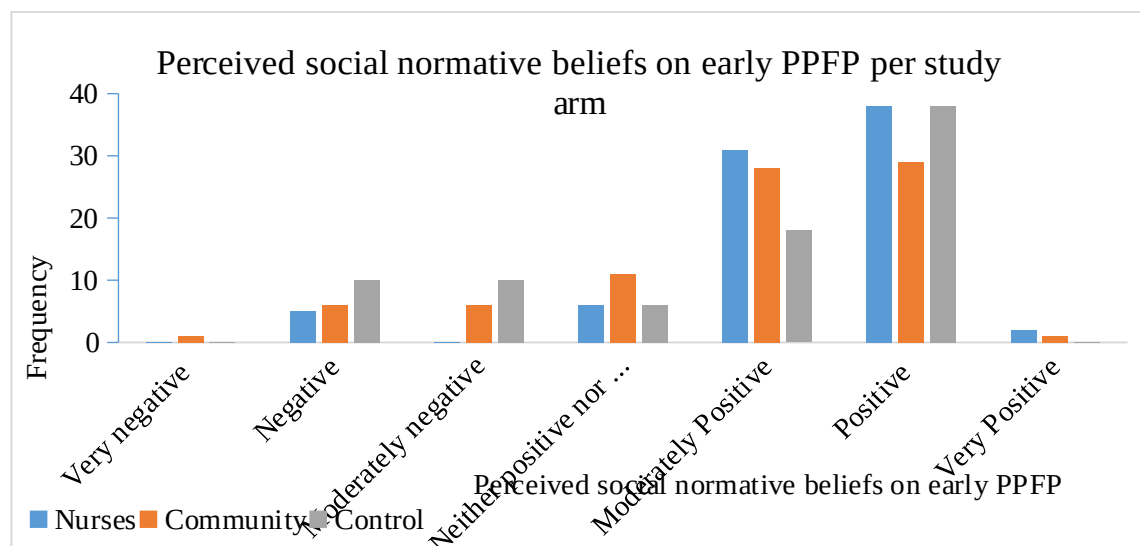


Table 4.16 is an output of ordinal logistic regression analysis to demonstrate the relationship between client related aspects, and process related aspects and perceived social normative beliefs on early PPFP. The sociodemographic characteristics fitted in the ordinal regression analysis model were clients age, level of education, monthly income, marital status, and employment status. Only marital status and employment status had a significant effect on perceived social normative beliefs on early PPFP. Being married reduced the odds of having positive perceived social normative beliefs on early PPFP (OR:0.7, 95%CI: 0.5-1.0, P=0.038). On the contrary, being employed increased the odds of having a positive perceived social normative belief on early PPFP (OR:1.45, 95%CI: 1.05-2.0, P=0.024).

Pregnancy aspects fitted in the ordinal regression analysis model were number of ANC visits, gestation when PPFP counselled, comorbidity, number of children, health education in pregnancy, and complication during pregnancy. None of the pregnancy related aspects had a significant effect on perceive social normative beliefs on early PPFP. However, starting the counselling later in pregnancy, having more children and having complications in pregnancy increased the odd of having a positive perceive social normative beliefs on early PPFP, although not statistically significant.

Labour, Delivery and postpartum aspects fitted in the ordinal logistic regression model were health education afterbirth, labour complications, postpartum complication, and health status in 3 months postpartum. None of these aspects had a significant effect on participants' perceived social normative beliefs on early PPFP. All the other aspects except health status of the participants in 3 months postpartum had a positive influence on participants' perceived social normative beliefs on early PPFP even though not significant.

Rating of previous experience with FP and estimated cost of previous FP services were fitted in the ordinal regression model. The two did not elicit any significant effect on perceived social normative beliefs on early PPFP.

Intimate partner relationship was fitted in the ordinal regression analysis model. Intimate partner relationship was rated on a 7-point Likert scale ranging from very bad intimate partner relationship (1) to very good intimate partner relationship (7). There was a significant relationship between intimate partner relationship and perceived social normative beliefs on early PPFP. As the rating of intimate partner relationship increased, there was an increase in odds of participants' positive perceived social normative beliefs

(OR: 2.1; 95% CI: 1.66-2.65, $P < 0.0001$) with about 16.5% of the relationship being explained by the model (Nagelkerke's Pseudo $R^2 = 0.165$).

Process related aspects fitted in the ordinal regression model were FP counselling waiting time, counselling turnaround, mode of counselling, counselling quality, and fidelity to process. None of the aspects in the model demonstrated a significant influence on the perceived normative beliefs towards early PPFP.

Table 4. 16: Predictors of perceived normative beliefs towards early PPFP

Category	Parameter	OR	95% CI	P Value
Client related aspects	Clients Age	1.0	0.9 - 1.1	0.981
	Marital status	0.7	0.5 – 1.0	0.038
	Level of education	0.8	0.6 - 1.2	0.304
	Employment status	1.5	1.1 – 2	0.024
	Monthly income	0.8	0.5 - 1.3	0.356
	Gestation at recruitment	1.0	1.0 - 1.1	0.852
	Existing illness	0.8	0.3 - 2.3	0.675
	Number of children	1.1	0.9 - 1.3	0.635
	Health education in pregnancy	0.5	0.1 - 1.8	0.309
	Complication during pregnancy	1.2	0.7 - 2.1	0.575
	ANC visits number	0.9	0.8 - 1.1	0.658
	Labour complications	1.1	0.5 - 2.3	0.753
	Postpartum complication	1.6	0.6 - 3.9	0.297
	Health education afterbirth	1.1	0.5 - 2.2	0.832
	Health status After pregnancy	1.9	0.6 - 5.9	0.278
	Health status 3 months postpartum	0.8	0.3 - 2.1	0.608
	Rating previous experience with FP	1.2	-27.1 - 1.2	0.755
	Estimated cost of previous FP services	0.9	-27.4 - 1.0	0.846
	Intimate partner relationship	2.1	1.6 - 2.7	<0.0001
Process related aspects	FP counselling waiting time	1.0	0.8 - 1.2	0.55
	FP Counselling turnaround	1.0	0.9 - 1.2	0.099
	Mode counselled	1.4	0.8 - 2.3	0.254
	Counselling Quality	0.9	0.8 - 1.0	0.638
	Fidelity to process	1.2	0.9 - 1.5	0.324
	Set Postnatal appointment	1.1	0.6 - 1.9	0.873

Ordinal regression analysis of predictors of perceived normative beliefs towards early PPFP; OR- Odds Ratio, 95% CI – 95% Confidence Interval, Significance set at $P \leq 0.05$.

4.6.2 Effect of intervention on perceived social normative beliefs about early PPFP

Table 4.17 shows the difference in distribution of perceived social normative beliefs on early PPFP per study arm was assessed using ANOVA. Partial η^2 was used to estimate between arm effect size for ANOVA.

The nurses' arm had a mean score of 5.6 (SD = 1.1), the community arm had a mean score of 5.2 (SD = 1.3), and the Control Arm had a mean score of 5.1 (SD = 1.4). Across all study arms, the total mean score for perceived social normative beliefs on PPFP was 5.3 (SD = 1.3).

ANOVA for perceived social normative beliefs on early PPFP was done with Levene's test showing that homogeneity of variance was not met $F(2,243) = 5.4$, $P = 0.005$ thus Brown-Forsythe adjusted ANOVA was used for interpretation and Tamhane's post hoc test used to estimate significance of difference, effect size between arms. The ANOVA for perceived social normative beliefs on early PPFP and study arms revealed a significant difference in the mean perceived social normative beliefs scores between arms $F(2,233.7) = 4.2$, $P = 0.015$ with Tamhane's post hoc test showing significantly more positive perceived social normative beliefs on PPFP between nurses' arm and community arm ($P = 0.047$) and control arms ($P = 0.022$) with a small effect size (partial η^2 0.01 to 0.04). There was no significant difference between community and control arms ($P = 0.972$).

Table 4. 17: ANOVA of social normative beliefs on early PPFP between study arms

Study Arm		MD	95% CI	P Value	Effect size
A	B	(A-B)			
Intervention	Control	0.3	-0.1 - 0.6	0.075	0.01
Nurses'	Community	0.4	0.0 - 0.9	0.047	0.04
Nurses'	Control	0.5	0.1 – 1.0	0.022	0.04
Community	Control	0.1	-0.4 - 0.6	0.972	0.00

A and B are column labels, MD- Mean difference between A and B; 95% CI is the Confidence Interval for the Mean Difference (MD); Effect size was estimated by Partial eta² (0.01 to <0.06 - Small, 0.06 to <0.14 medium, ≥0.14 Large); Tamhane's post hoc test was applied because homogeneity of variance was met, Significance set at P≤0.05.

4.6.3 Perceived social normative beliefs as predictors of early PPFP uptake

Cross-tabulation of perceived social normative beliefs groups and early PPFP uptake demonstrated a significant relationship $X^2(6) = 114.8$, $P < 0.0001$ as shown in Table 4.18.

Table 4. 18: Perceived social normative beliefs and early PPFP uptake

Perceived norm	Commenced FP		Total, N (%)	X ²	Df	P Value
	Yes, N (%)	No, N (%)				
Very negative	0 (0.0)	1 (100.0)	1 (0.4)	114.8	6	<0.0001
Negative	5 (23.8)	16 (76.2)	21 (8.5)			
Moderately negative	7 (43.8)	9 (56.3)	16 (6.5)			
Neither positive nor negative	20 (87.0)	3 (13.0)	23 (9.3)			
Moderately Positive	77 (100.0)	0 (0.0)	77 (31.3)			
Positive	99 (94.3)	6 (5.7)	105 (42.7)			
Very Positive	3 (100.0)	0 (0.0)	3 (1.2)			

X² is Chi-square statistic, df is Degrees of Freedom, N (%) where N is frequency, % is proportion, Significance set at P≤0.05.

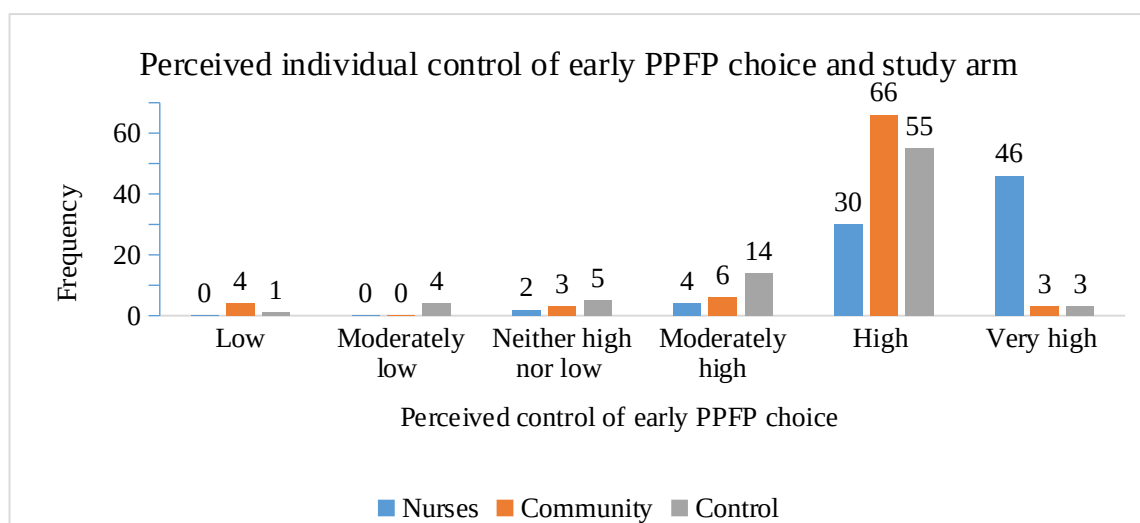
4.7 Objective 4: Perceived individual control of early PPFP choice among study participants

Individual control of choice of behaviour is one of the main constructs leading to behavioural intention. In this study, perceived individual control of PPFP choice was assessed by three (3) parameters geared towards confidence in using early PPFP, ease of PPFP use and ease of decision to use PPFP.

Perceived individual control of PPFP choice was assessed using Likert scale questions and summarized into a continuous variable which was later converted into an ordinal scale. Before conversion to scale the findings of perceived individual control of PPFP choice were summarized into descriptive statistics for continuous variable. The mean of parameters of perceived individual control of early PPFP were calculated to estimate overall control beliefs thus classified as; very high (7), high ($\geq 6 < 7$), moderately high ($\geq 5 < 6$), neither high nor low ($\geq 4 < 5$), moderately low ($\geq 3 < 4$), low ($\geq 2 < 3$), and very low ($\geq 1 < 2$). The average perceived individual control of early PPFP was high 6.1 (SD=0.9).

Figure 4.6 shows that overall perceived behavioural control ranged from low (2%), moderately low (1.6%), neither high nor low (4.1%), moderately high (9.8%), high (61.4%) and very high (21.1%). The participants had a generally high level of perceived control of PPFP choice with 92.3% ranging in the moderately high, high and very high spectrum of perceived control.

Figure 4. 6: Perceived individual control of early PPFP choice and study arm



4.7.1 Predictors of perceived individual control of early PPFP choice

The ordinal scale for perceived individual control was then fitted in an ordinal regression analysis with client related characteristics of the participants and counselling process aspects as its predictors as shown in Table 4.19. Client related aspects were disaggregated into sociodemographic characteristics, pregnancy, labour and delivery aspects, previous FP experience, and intimate partner relationship. The sociodemographic characteristics fitted in the ordinal regression analysis model were clients age, level of education, monthly income, marital status, and employment status. Only employment status had a significant effect on perceived individual control of early PPFP choice. Being employed reduced the odds of perceived control of early PPFP choice (OR:0.7, 95%CI: 0.5-0.9, P=0.022). On the contrary, an increase in age increased the odds of having a higher perceived control of early PPFP choice albeit not a significant relationship (OR:1.1, 95% CI: 1.0-1.2, P=0.084).

The pregnancy aspects fitted in the ordinal regression analysis model were number of ANC visits, gestation when PPFP counselled, comorbidity, number of children, health education in pregnancy, and complication during pregnancy. None of the pregnancy related aspects had a significant effect on perceived individual control of early PPFP choice. However, as number of ANC visits increased, having more children and having complications in pregnancy increased the odd of having a higher perceived individual control of early PPFP choice., although not statistically significant.

The labour, delivery and postpartum aspects fitted in the ordinal logistic regression model were health education afterbirth, labour complications, postpartum complication, and health status in 3 months postpartum. Health education afterbirth was the only significant

determinant of perceived individual control of early PPFP choice. Being health educated was a binary variable with a 1 for “yes” and a 2 for “no” thus the tendency towards not having been educated in post-delivery reduced the odds of perceived individual control of early PPFP choice (OR:0.5; 95% CI: 0.2-0.9; P=0.030). Rating of previous experience with FP and estimated cost of previous FP services did not elicit any significant effect on perceived individual control of early PPFP choice.

Intimate partner relationship was rated on a 7-point Likert scale ranging from very bad intimate partner relationship (1) to very good intimate partner relationship (7). There was a significant relationship between intimate partner relationship and perceived individual control of early PPFP choice. As the rating of intimate partner relationship increased, there was an increase in odds of perceived individual control of early PPFP choice (OR: 1.4; 95% CI: 1.1-1.7, P=0.009).

Process related aspects such as FP counselling waiting time, counselling turnaround, mode of counselling, counselling quality, fidelity to process and accepting to set postnatal appointment for PPFP were fitted in the ordinal regression model. FP counselling waiting time, FP Counselling turnaround, mode counselled, and fidelity to process had a significant effect on perceived individual control of early PPFP choice. Mode of counselling tending towards individual counselling, and high fidelity to process increased the odds of perceived individual control of early PPFP choice (OR:2.5; 95% CI: 1.4-4.7, P=0.002) and (OR:1.8; 95% CI:1.3-2.4, P<0.0001), respectively. Both FP counselling waiting time and FP counselling turnaround had an inverse relationship with perceived individual control of early PPFP choice whereby as each of increased the odds of high

perceived individual control of early PPF choice reduced (OR:0.9; 95% CI: 0.8-1.0, P=0.027) and (OR:0.9; 95% CI:0.8-1.0, P<0.0001), respectively.

Table 4. 19: Predictors of perceived individual control of early PPF choice

Category	Parameter	OR	95% CI	P Value
Client related aspects	Clients Age	1.1	1.0 - 1.1	0.084
	Marital status	1.2	0.8 - 1.8	0.463
	Level of education	0.9	0.6 - 1.3	0.633
	Employment status	0.7	0.5 – 1.0	0.022
	Monthly income	0.8	0.4 - 1.3	0.313
	ANC visits number	1.1	0.9 - 1.3	0.600
	Gestation at recruitment	1.0	0.9 - 1.1	0.993
	Existing illness	0.4	0.1 - 1.4	0.152
	Number of children	1.2	1.0 - 1.5	0.097
	Health education in pregnancy	0.4	0.1 - 1.3	0.130
	Complication during pregnancy	1.1	0.6 - 2.0	0.762
	Labour complications	1.0	0.4 - 2.2	0.977
	Postpartum complication	0.8	0.3 - 2.1	0.653
	Health education afterbirth	0.5	0.2 - 0.9	0.030
	Health status after Labour	0.6	0.2 - 1.7	0.289
	Health status 3 months postpartum	0.8	0.3 - 2.1	0.593
	Rating previous experience with FP	1.4	-1.0- 1.5	0.442
	Estimated cost of previous FP	1.1	-3.3 - 1.2	0.862
	Intimate partner relationship	1.4	1.1 - 1.7	0.009
Process related aspects	FP counselling waiting time	0.9	0.9 – 1.0	0.027
	FP Counselling turnaround	0.9	0.8 – 1.0	<0.0001
	Mode of counselling	2.5	1.4 - 4.7	0.002
	Counselling Quality	1.0	0.9 - 1.1	0.114
	Fidelity to process	1.8	1.3 - 2.4	<0.0001
	Set Postnatal appointment	1.52	0.8 - 2.88	0.204

Ordinal regression analysis of the predictors of perceived individual control of early PPF choice. OR- Odds Ratio, 95% CI – 95% confidence interval, Significance set at P≤0.05.

4.7.2 Effect of intervention on perceived individual control of early PPF choice

Table 4.20 shows the difference in distribution of perceived individual control of early PPF choice per study arm was assessed using ANOVA. A summary of descriptive statistics per arm was also done as a preamble to the main ANOVA test. Partial eta² was used to estimate between arm effect size for ANOVA.

The nurses' arm had a mean score of 6.6 (SD = 0.6), the community arm had a mean score of 5.9 (SD = 0.9), and the control arm had a mean score of 5.8 (SD = 0.9). Across all study arms, the total mean score for perceived individual control of PPFP choice was 6.1 (SD = 0.9).

One-way ANOVA for perceived individual control of PPFP choice was done with Levene's test showing that homogeneity of variance was met, $F(2,243) = 1.2$, $P = 0.304$ thus Tukey's post hoc test used to estimate effect size between arms. The ANOVA for perceived individual control and study arms revealed a significant difference in the mean client satisfaction scores between arms $F(2,246) = 21.0$, $P < 0.0001$ with Tukey's post hoc test showing significantly more perceived individual control of PPFP choice between nurses' arm and community arm ($P < 0.0001$) and control arms ($P < 0.0001$) with effect size ranging from small to large per arm comparison. There was no significant difference between community arm and control arm ($P = 0.975$).

Table 4. 20: ANOVA of perceived control of early PPFP choice between study arms

Study Arm		MD	95% CI	P Value	Effect size
A	B	(A-B)			
Intervention	Control	0.4	0.2-0.6	<0.0001	0.04
Nurses'	Community	0.7	0.4 - 1.0	<0.0001	0.18
Nurses'	Control	0.7	0.4 - 1.0	<0.0001	0.18
Community	Control	0.1	-0.3 - 0.3	0.975	0.00

A and B are column labels, MD- Mean difference between A and B; 95% CI is the Confidence Interval for the Mean Difference (MD); Effect size was estimated by Partial η^2 (0.01 to <0.06 - Small, 0.06 to <0.14 medium, ≥ 0.14 Large); Tukey's post hoc test was applied because homogeneity of variance was met, Significance set at $P \leq 0.05$.

4.7.3 Perceived individual control of early PPFP as predictor of PPFP uptake

Postpartum FP uptake was then cross tabulated with perceived individual control beliefs.

There was a significant relationship between perceived behavioural control and uptake of PPFP ($P < 0.0001$) as shown in Table 4.21.

Table 4. 21: Perceived individual control and early PPFP uptake

Behavioural control	Commenced FP		Total, N(%)	X^2	df	P Value
	Yes, N(%)	No, N(%)				
Low	0 (0.0)	5 (100.0)	5 (2.0)	74.2	5	<0.0001
Moderately low	1 (25.0)	3 (75.0)	4 (1.6)			
Neither high nor low	4 (40.0)	6 (60.0)	10 (4.1)			
Moderately high	17 (70.8)	7 (29.2)	24 (9.8)			
High	138 (91.4)	13 (8.6)	151 (61.4)			
Very high	51 (98.1)	1 (1.9)	52 (21.1)			

X² is Chi-square statistic, df is Degrees of Freedom, N(%) where N is frequency, % is proportion, Significance set at $P \leq 0.05$.

4.8 Objective 5: Intention for early PPFP use among participants

Intention as a construct in TPB has been analyzed for basic descriptive statistics of Likert scale scores, ordinal regression with the sociodemographic and obstetric aspects, variance assessment for intention between study arms and bivariate analysis of intention and uptake as a criterion for inclusion in final binary logistic regression of predictors of early PPFP uptake.

Intention to use early PPFP was assessed using three Likert scale questions and summarized into a continuous variable which was later converted into an ordinal scale by averaging the score per participant. After getting the mean scores for intention the following criteria was used to classify it; very high intention ($=7$), high intention ($\geq 6, <7$), moderately high intention ($\geq 5, <6$), neither high nor low intention ($\geq 4, <5$), moderately low intention ($\geq 3, <4$), low intention ($\geq 2, <3$), and very low intention ($\geq 1, <2$). The

distribution of intention was as follows; neither high nor low intention 8 (3.3%) with the control and community arms having 4 (1.6%) each. Moderately high intention was reported among 33 (13.4%) participants, high intention 113 (45.9%) participants, and very high intention 92 (37.4%) with a mean of 6.2 ± 0.8 as shown in Figure 4.7.

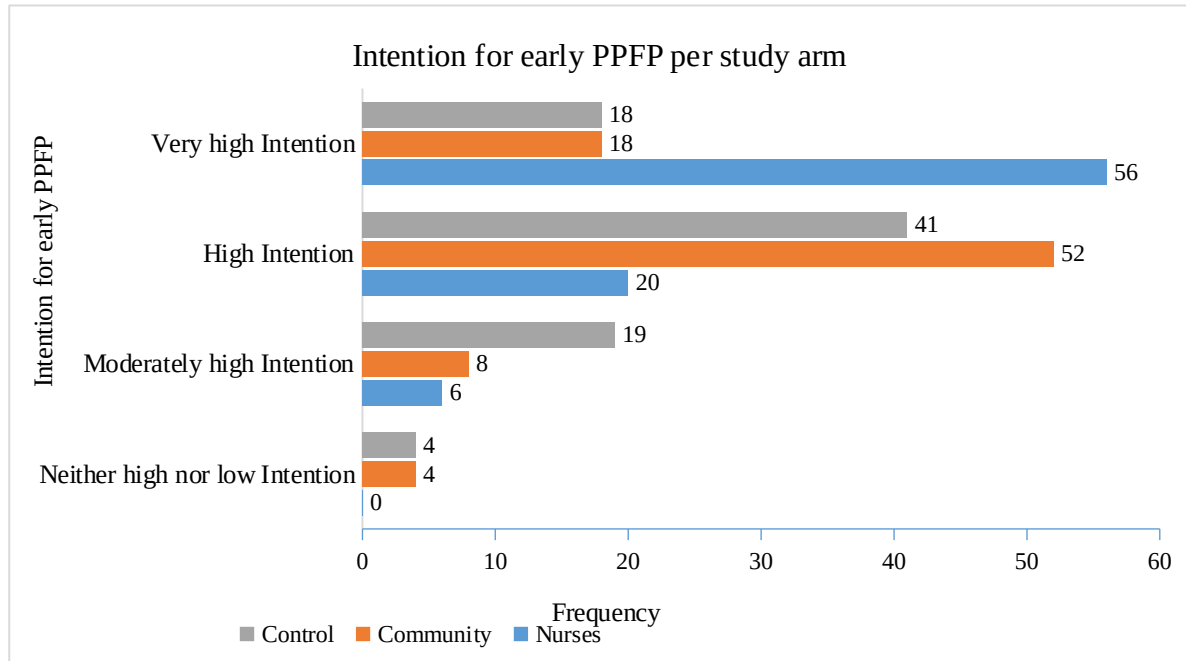


Figure 4. 7: Rating of intention to use early PPFP per study arm

4.8.1 Predictors of intentions for early PPFP

Table 4.22 is an output of ordinal logistic regression that demonstrates the relationship between characteristics of the participants and counselling process aspects and intention to use early PPFP. Client related aspects were disaggregated into sociodemographic characteristics, pregnancy, labour and delivery aspects, previous FP experience, and intimate partner relationship. The sociodemographic characteristics fitted in the ordinal regression analysis model were clients age, level of education, monthly income, marital status, and employment status were fitted in the ordinal regression analysis model. Only client's age had a significant effect on intention to use early PPFP. An increase in age

increased the odds of higher intention to use early PPFP (OR:1.1, 95%CI: 1.0-1.2, P=0.022).

The pregnancy related aspects fitted in the ordinal regression analysis model were number of ANC visits, gestation when PPFP counselled, comorbidity, number of children, health education in pregnancy, and complication during pregnancy. Number of children and health education during pregnancy had significant effect on intentions for early PPFP. Having more children increased the odd of having high intention for early PPFP (OR:1.3; 95% CI: 1.1-1.6; P=0.004). Being health educated was a binary variable with a 1 for “yes” and a 2 for “no” thus the tendency towards not having been educated in pregnancy reduced the odds of intending to use early PPFP (OR:0.3; 95% CI: 0.1-1.0; P=0.042).

The labour, delivery and postpartum aspects fitted in the ordinal logistic regression model were health education afterbirth, labour complications, postpartum complication, and health status in 3 months postpartum. None of the labour, delivery and postpartum related aspect had a significant effect on intentions for early PPFP. Rating of previous experience with FP and estimated cost of previous FP services did not elicit any significant effect on intentions for early PPFP.

Intimate partner relationship was rated on a 7-point Likert scale ranging from very bad intimate partner relationship (1) to very good intimate partner relationship (7). There was a significant relationship between intimate partner relationship and intentions for early PPFP. As the rating of intimate partner relationship increased, there was an increase in odds of intentions for early PPFP (OR: 1.5; 95% CI: 1.2-1.8, P<0.0001).

Ordinal regression analysis to assess effects of process related aspects on intention to use early PPFP was done. FP counselling waiting time, counselling turnaround, mode of counselling, counselling quality, fidelity to process and accepting to set postnatal appointment for PPFP were fitted in the ordinal regression model. FP Counselling turnaround, fidelity to process and accepting to set postnatal appointment for early PPFP had a significant effect on intention to use early PPFP. As both fidelity to process and chance of setting postnatal appointment for early PPFP increased there was a congruent increase in the odds of intention to use early PPFP (OR:2.62; 95% CI: 1.9-3.6, $P<0.0001$) and (OR:2.4; 95% CI:1.3-4.6, $P=0.007$), respectively. FP Counselling turnaround had an inverse relationship with intention to use early PPFP whereby as counselling turnaround time increased the odds of intention to use early PPFP reduced (OR:0.9; 95% CI: 0.9-1.0, $P<0.0001$). FP counselling waiting time had a similar relationship with intention as FP counselling turnaround time albeit not significant. Mode of counselling (individual counselling) and quality of counselling increased the odds of intention to use early PPFP although not significant.

Table 4. 22: Predictors of intentions for early PPFP use

Category	Parameter	O R	95% CI	P Value
Client related aspects	Clients Age	1.1	1.0 - 1.2	0.022
	Marital status	0.9	0.6 - 1.4	0.750
	Level of education	0.7	0.5 - 1.0	0.084
	Employment status	0.9	0.6 - 1.2	0.342
	Monthly income	0.9	0.5 - 1.5	0.58
	ANC visits number	0.9	0.8 - 1.1	0.647
	Gestation at recruitment	1.0	0.9 - 1.1	0.255
	Existing illness	1.3	0.4 - 3.8	0.65
	Number of children	1.3	1.1 - 1.6	0.004
	Health education in pregnancy	0.3	0.1 - 1.0	0.042
	Complication during pregnancy	1.0	0.5 - 1.7	0.914
	Labour complications	0.7	0.3 - 1.5	0.384
	Postpartum complication	1.2	0.5 - 2.8	0.736
	Health education afterbirth	0.9	0.4 - 1.8	0.742
	Health status After pregnancy	0.9	0.3 - 2.6	0.861
	Health status 3 months postpartum	0.5	0.2 - 1.3	0.151
	Rating previous experience with FP	1.4	-0.2 - 1.4	0.504
	Estimated cost of previous FP services	0.9	-0.6 – 1.0	0.895
	Intimate partner relationship	1.5	1.2 - 1.8	<0.000 1
Process related aspects	FP counselling waiting time	1.0	0.9 – 1.1	0.097
	FP Counselling turnaround	0.9	0.9 – 1.0	<0.000 1
	Mode of counselling	1.3	0.7 - 2.2	0.449
	Counselling Quality	1.0	1.0 - 1.1	0.105
	Fidelity to process	2.6	1.9 - 3.6	<0.000 1
	Set Postnatal appointment	2.4	1.3 - 4.6	0.007

Ordinal regression analysis of predictors of intentions for early PPFP use. OR- Odds Ratio, 95% CI – 95% confidence interval, Significance set at $P \leq 0.05$

4.8.2 Effect of intervention on intention for early PPFP

Table 4.23 shows the difference in distribution of intention to use early PPFP per study arm as was assessed using ANOVA. Partial η^2 was used to estimate between arm effect size for ANOVA. The nurses' arm had a mean intention for early PPFP of 6.6 ± 0.9 , the community arm 6.1 ± 0.9 , and the control arm had a mean score of 6.0 ± 0.7). Across all study arms, the total mean intention score for Early PPFP was 6.2 ± 0.9).

A one-way ANOVA for intentions for early PPFP was done with Levene's test showing that homogeneity of variance was met $F(2,243) = 0.7$, $P = 0.490$ thus Tukey's post hoc test used to estimate which arms had significant difference in intention, effect size estimation between arms. The ANOVA for intentions for early PPFP and study arms revealed a significant difference in the mean client intention scores between arms $F(2,243) = 12.4$, $P < 0.0001$ with Tukey's post hoc test showing significantly higher intention for early PPFP between nurses' arm and community arm ($P < 0.0001$) and control arms ($P < 0.0001$) with effect size varying for between arm comparisons. There was no significant difference in intention between the community arm and control arm ($P = 0.986$).

Table 4. 23: ANOVA of intention for early PPFP between study arms

Study Arm		MD (A-B)	95% CI	P Value	Effect size
A	B				
Intervention	Control	0.3	0.1 - 0.5	0.012	0.03
Nurses	Community	0.5	0.2 - 0.8	<0.0001	0.09
Nurses'	Control	0.6	0.3 - 0.9	<0.0001	0.11
Community	Control	0.1	-0.3 - 0.3	0.986	0.00

A and B are column labels, MD- Mean difference between A and B; 95% CI is the Confidence Interval for the Mean Difference (MD); Effect size was estimated by Partial η^2 (0.01 to <0.06 - Small, 0.06 to <0.14 medium, ≥ 0.14 Large); Tukey's post hoc test was applied because homogeneity of variance was met, Significance set at $P \leq 0.05$.

4.8.3 Intention for early PPFP as a predictor of early PPFP uptake

Postpartum FP uptake was then cross tabulated with intention. There was a significant relationship demonstrated between PPFP uptake and intention for early PPFP $\chi^2(3) = 184.7$, $P < 0.0001$ as shown in Table 4.24.

Table 4. 24: Bivariate analysis of intention for PPFP uptake and PPFP uptake

Intention	Commenced FP		Total, N (%)	X ²	D f	P Value
	Yes, N (%)	No, N (%)				
Neither high nor low Intention	4 (50)	4 (50)	8 (3.3)	184.7	3	<0.0001
Moderately high Intention	4 (12.1)	29 (87.9)	33 (13.4)			
High Intention	111 (98.2)	2 (1.8)	113 (45.9)			
Very high Intention	92 (100)	0 (0)	92 (37.4)			

X² is Chi-square statistic, df is Degrees of Freedom, N(%) where N is frequency, % is proportion. Significance set at $P \leq 0.05$.

4.9 Objective 6: Determinants of early PPFP uptake in Kisumu County

Chi-square statistics applied in the prior analysis was used as the inclusion criteria for binary logistic regression analysis. Those that had a significant relationship were included in the final binary logistic regression analysis to determine the predictors of early PPFP uptake. Participants' characteristics including sociodemographic aspects, obstetric history of the client, pregnancy, labour, delivery and post-delivery aspects; intimate partner relationship, intervention process aspects; and TPB constructs attitude towards PPFP, perceived social normative beliefs, behavioural control and intention were fitted into the binary logistic regression as determinants of uptake of PPFP.

Participants' characteristics included sociodemographic characteristics, obstetric history of the client, pregnancy, labour delivery and post-delivery characteristics of the client. The initial bivariate analysis screening of these characteristics showed that the number of ANC visits, employment status, monthly income, number of children, and being health educated in pregnancy had a significant relationship with early PPFP uptake. Therefore, these aspects are the ones that were taken to the binary logistic regression model for participants' characteristics to determine whether they were predictors of early PPFP uptake. Table 4.25 shows the factors that were adjusted for in a binary regression analysis using the enter mode with Hosmer and Lemeshow Test for goodness of fit $X^2 (8) = 9.7$,

P=0.284 showing a good model fit with 9% of the effect being predicted by the model (Nagelkerke's R Square = 0.09). Being health educated in pregnancy increased the odds of using early PPFP by more than 4-fold (OR:4.6; 95% CI:1.2-18.4; P=0.030).

Intimate partner relationship was rated on a 7-point Likert scale ranging from very bad intimate partner relationship (1) to very good intimate partner relationship (7). It had shown a significant relationship with uptake of early PPFP during the selection criteria using Chi-square statistic in a bivariate analysis. When fitted in a binary regression analysis model using enter criteria with a Hosmer and Lemeshow Test $X^2 (2) = 9.0$, P=0.011 and Nagelkerke's $R^2 = 0.161$, intimate partner relationship persisted as a predictor of uptake of early PPFP with a more than 2-fold effect on the odds of early PPFP use (OR:2.3; 95% CI:1.6-3.3; P<0.0001).

Process aspects that demonstrated a significant relationship with early PPFP uptake during the initial selection criteria evaluation in bivariate analysis were service provider score post-test, FP counselling turnaround time, mode of counselling (group vs individual), fidelity to counselling process, and accepting to set a postnatal appointment for PPFP uptake. These aspects were adjusted for in a binary logistic regression model using enter mode, Hosmer and Lemeshow Test $X^2 (2) = 15.1$, P=0.057. A high FP counselling turnaround time and being counselled in group significantly reduced the odds of uptake of early PPFP (OR:0.9, 95% CI:0.8-1.0, P=0.032), and (OR:0.3, 95% CI:0.1-0.6, P=0.002), respectively with 16.6% of these outcomes being explained by the model (Nagelkerke's R Square = 0.166). However, accepting to set a postnatal appointment for PPFP uptake increased the odds of early PPFP uptake by more than 2-fold (OR:2.6, 95% CI:1.2-5.8, P=0.021).

TPB constructs to be included in the final binary regression model were selected using bivariate analysis and Chi-square statistics as the selection criteria. Perceived normative belief about early PPFP, perceived behavioural control of PPFP choice, and intention for early PPFP use had a significant relation with early PPFP uptake. Upon adjustment in a binary regression model (Hosmer and Lemeshow Test $X^2(2) = 1.5$, $P = 0.992$), perceived normative belief about early PPFP (OR:3.6, 95% CI:2.1-6.3, $P < 0.0001$), perceived behavioural control of PPFP choice (OR:6.6, 95% CI:2.5-17.8, $P < 0.0001$), and intention to use early PPFP (OR:3.3, 95% CI:1.7-6.2, $P < 0.0001$) persisted as predictors of early PPFP uptake as shown in Table 4.25. About 77% of the effect could be predicted by the model (Nagelkerke's $R^2 = 0.769$).

Table 4. 25: Determinants of early PPFP uptake

Characteristic	Variables	OR	95% CI	P Value
Participants' characteristics	ANC visits number	1.1	0.9 - 1.4	0.444
	Employment status	1.4	0.9 - 2.2	0.169
	Monthly income	1.6	0.9 - 3.1	0.121
	Number of Children	0.8	0.6 - 1.2	0.264
	Health educated in pregnancy	4.6	1.2 - 18.4	0.030
	Intimate partner relationship	2.3	1.6 - 3.3	<0.0001
Process aspects	Service provider Score Post-test	1.0	1.0 - 1.1	0.432
	FP Counselling turnaround time	0.9	0.8 - 1.0	0.032
	Mode counselled (group vs individual)	0.3	0.1 - 0.6	0.002
	Fidelity to counselling process	0.9	0.6 - 1.5	0.655
	Set a Postnatal appointment	2.6	1.2 - 5.8	0.021
TPB constructs	Attitude towards early PPFP uptake	0.7	0.1 - 4.8	0.713
	Perceived normative belief about early PPFP	3.6	2.1 - 6.3	<0.0001
	Perceived Behavioural Control of PPFP choice	6.6	2.5 - 17.8	<0.0001
	Intention	3.3	1.7 - 6.2	<0.0001

Binary regression analysis of determinants of early PPFP uptake. OR- Odds Ratio, 95% CI – 95% confidence interval. Significance set at $P \leq 0.05$.

CHAPTER FIVE

DISCUSSION

5.1 Overview

In this chapter, the results are discussed starting with a general overview of the key findings paraphrased in the introduction, then participant characteristics are explored in the context of previous studies. Further, the findings on uptake of early PPFP, attitude towards early PPFP, perceived social normative beliefs about early PPFP, perceived behavioural control of early PPFP choice, intention for early PPFP use and predictors of early PPFP uptake are discussed in relation to other studies conducted in various settings.

5.2 Introduction

This was a pragmatic randomized control trial involving 246 participants to evaluate the effectiveness of antenatal FP information provision to pregnant mothers on early PPFP uptake. The trial had three arms: nurses', community, and control. Most participants were married, educated, and had attended multiple antenatal care visits. The nurses' arm had the advantage of shorter counselling waiting and turnaround times. Early PPFP uptake was at 85.8%, with higher uptake in rural facilities (90.2%) compared to urban ones (81.3%). PPFP uptake within the nurses' arm was 95.1%, outperforming both the Community (86.6%) and control arms (75.6%). Over 70% opted for hormonal methods, with implants being the most popular. A majority (96.4%) of participants had a positive attitude towards early PPFP. However, higher education levels and the presence of comorbidities negatively impacted these attitudes. Interestingly, longer waiting times for FP counselling correlated with less positive attitudes, but no significant differences were found among the different study arms in this regard. Most of the participants (75%) held positive normative

beliefs about PPFP. Factors like marital status and employment influenced these beliefs, but pregnancy-related factors did not. Stronger intimate partner relationships correlated with increased satisfaction with counselling. Participants in the nurses' arm displayed more positive normative beliefs than those in the other two arms. Perceived control over PPFP was high among 92.3% of participants. Employment negatively affected this perception, but factors like age and post-childbirth health education played a role in strengthening perceived control of early PPFP choice. Longer counselling waiting times reduced perceived control, and the nurses' arm again outperformed the other arms in terms of perceived control levels. The study also looked at participants' intention to use PPFP, finding that older age and having more children increased this intention. Timely and effective FP counselling and postnatal appointments positively influenced intention, while prolonged waiting times had the opposite effect. The nurses' arm exhibited a significantly higher intention to use PPFP compared to the community and control arms. Several key determinants influenced early PPFP uptake, including receiving health education during pregnancy, the quality of intimate partner relationships, and agreeing to postnatal PPFP appointments. The study identified the following TPB constructs as predictors of early PPFP uptake; perceived normative beliefs about early PPFP, control over PPFP choices, and initial intentions of utilizing early PPFP.

5.3 Participants' and process characteristics

The study found that most of the respondents were young (below age 25), married, and housewives, and that Christianity was the dominant religion. The study population characteristics are reflective of the general population in the study region and in tandem with the study's target population, women of reproductive age (15-49 years) (KNBS,

2015; UNDESA & UNFPA, 2020). Most of the participants had at least 4 ANC visits which is the target under the Focused Antenatal Care (FANC) program, where pregnant women are expected to have at least 4 antenatal visits. A further analysis of study arm and ANC visits revealed serendipitous finding where intervention had a significantly high (89.6%) ANC attendance as compared to the control arm (65.9%) which is comparable to the general population (64%) (UNFPA Kenya, 2022). Most of the enrollments in the study occurred in the third trimester of pregnancy as per the protocol.

A majority of the participants (76.1%) had an interbirth interval of at least 24 months, which is the recommended minimum interval between pregnancies to ensure optimal maternal and child health. The participants were selected from those who were attending antenatal care (ANC) services, which could introduce selection bias because these individuals may be more likely to have good health-seeking behaviour and to adhere to recommendations such as attaining the recommended interbirth intervals. The study had only 65% of the participants having prior pregnancies, which suggests that not all of the participants have had the opportunity to make choices on the right interbirth intervals in the past. As much as it is important to consider the potential for selection bias in this study and its possible impact on the generalizability of the findings, having control population selected on the same basis would evenly distribute the bias thus, ensuring a valid comparison and generalization (Sil *et al.*, 2019).

Most of the participants were recruited in the third trimester as much as the study targeted those in second and third trimester, having most of participants in the third trimester of pregnancy may be useful for studying PFP, as this is the period when women are most likely to be considering their options for FP after giving birth (Dam *et al.*, 2022). However,

recruiting participants earlier in pregnancy may also be beneficial for studying the factors that influence women's decisions about FP (Tran, Gaffield, *et al.*, 2018).

The fact that almost all (95.9%) of the participants received education before and after delivery on skilled birth attendance, danger signs, education on breastfeeding, new-born care, FP, and self-care, and other important topics suggests that this was a well-organized and comprehensive study, and that the routine care is providing women attending ANC and the new mothers all the important learning opportunities to maximize pregnancy, labour and delivery outcomes. Providing education to pregnant women and new mothers can be an important way to improve maternal and child health outcomes as well as increase early PFP uptake (Al-Ateeq & Al-Rusaies, 2015; Tran, Yameogo, Langwana, *et al.*, 2018). Other studies in Kenya have shown low health education coverage for this demographic and even areas that were proposed in some studies have been shown to be the themes that recurred in the current study's microteaching plans for pregnant and postpartum women (Maldonado *et al.*, 2020; Rotich & Wolvaardt, 2017).

A high proportion of the participants had previously used FP methods, with a significant proportion incurring costs for their use. This suggests that there may be a high demand for PFP in this population and cost of getting FP could occasion high unmet need for contraceptives. Studies in sub-Saharan Africa and other specific ones in Nigeria and Kenya established that direct costs, the associated costs of lost wages, transport and other financial challenges have led to poor uptake of contraceptive of both postnatal mothers and the general population of women of reproductive age (Akamike *et al.*, 2020; Haider & Sharma, 2012; Ochako *et al.*, 2015). This concern can be applied to demand and utilization for early PFP.

The quality of an individual's intimate partner relationship could potentially influence their decision-making and behaviours related to FP (Coomson & Manu, 2019). Sileo et al (2015) established that women in good intimate partner relationships may feel more supported and able to discuss and make decisions about FP with their partner (Sileo *et al.*, 2015). This could lead to better communication and planning around PPF, potentially resulting in higher uptake and adherence to FP methods. Bad intimate partner relationships on the other hand may lead to barriers to discussing and making decisions about PPF, potentially leading to lower uptake and adherence to FP methods. This could be due to a lack of communication or support from their partner, or potentially due to coercion or other forms of control. Women in intimate partner relationships that are neither good nor bad may face different challenges and opportunities related to PPF with ambivalence in decision making being the biggest challenge (Shattuck *et al.*, 2011). The current study had intimate partner relationship as one of the moderating aspects of intention to use and actual uptake of PPF. The rating of intimate partner relationship had a high (84.9%) positive rating denoting good intimate partner relationship. It is worth noting that the quality of an individual's intimate partner relationship is just one factor that can influence PPF decision-making and behaviours. Other factors, such as access to FP information and services, cultural and social norms, and personal beliefs and values, may also play important roles. Further analysis could help to better understand the specific dynamics and influences at play in these types of relationships. Thus, the influence of intimate partner relationship on PPF aspects can be modeled by other factors whose effect was not in the scope of the current research. Nonetheless, as with the other general factors, its effect in moderating the constructs in the TPB model has been assessed.

The finding that 80% of clients wanted to set a postnatal appointment for PPFP suggests that there is a high level of interest in PPFP among antenatal mothers. Considering the fact that the intervention arm had more than three times the number of participants planning for a postpartum appointment shows that intervention created more demand for PPFP than routine ANC. Further, the finding that there was a significant difference in the proportion of participants in the nurses' arm of the study who accepted to set a postnatal appointment for PPFP compared to those in the community and control arms suggests that the intervention through the nurses' arm was more effective at increasing early PPFP demand than the routine practice and community-based approach. This could be an important consideration for healthcare providers and policymakers in terms of planning and providing PPFP services. There are several possible explanations for why there might be a high level of interest in PPFP among this group of clients including personal beliefs and values, practical considerations, access to information and services. Some individuals may have strong personal beliefs about the importance of FP and may be motivated to start using PPFP methods as soon as possible after giving birth while some may have practical considerations that make PPFP particularly important to them, such as the need to space their pregnancies, manage their fertility, or avoid unintended pregnancies. If clients have had access to information about PPFP before or during their pregnancy, they may be more likely to be aware of the options available and to express an interest in setting a postnatal appointment for PPFP (Puri *et al.*, 2020). The routine FP services to general population and other reproductive health services in Kenya have appointments as part of the strategy to optimize uptake. Still, early postnatal appointments for early PPFP are not reiterated upon both in policy and practice (MOH, 2018, 2022; Mwangi *et al.*, 2008). It is important to consider the specific needs and preferences of antenatal clients who accept to set a

postnatal appointment for early PPFP to effectively meet their demand for PPFP services. This could include providing a range of PPFP methods to choose from, ensuring access to high-quality information and counselling, and addressing any barriers to accessing PPFP services (WHO, 2013a). Research on the use of postnatal appointment setting for PPFP have shown that as a standalone intervention and as an integrated intervention, it improves the uptake of early PPFP (Atukunda *et al.*, 2019; Hamon *et al.*, 2022; HIP Partnership, 2022). Therefore, postnatal appointment setting can be adopted in the routine care to improve demand and utilization for early PPFP.

The data shows that the mean waiting time between the three arms was significantly different. The community and control arms had significantly longer waiting time than for the nurses' arm. It seems that there may be some contributing factors to the longer waiting times in the community arm, such as participant-counsellor familiarity leading to prolonged social chat before engaging the real counselling and the need to first access normal ANC services first before being referred to a Community Health Promoter for counselling. The mean counselling turnaround time for the community arm was significantly longer than the turnaround times for the control and nurses' arms. The counsellors in nurses' and control arms were nurses thus, could be they are well versed with FP counselling therefore it is highly likely the reason for shorter time. Waiting time is a key factor in enhancing or hindering access depending on how it is used to enhance perception of the client towards the care being provided, either a time wasting or time conscious, precise and therefore quality (Kyei-Nimakoh *et al.*, 2017).

There was a significant difference in service provider's post-test scores between the intervention arms (the nurses' and community arms) and the control arm, but not between the two intervention arms themselves. The service providers were given a refresher training for both the control and intervention arms. Giving a refresher course to the control arm was to ensure that beneficence is maximized even for the participants in the control arm (NIH, 2018). This was one of the process indicators that was measured to aid in comparing the outcome versus what went into the intervention process.

The counselling process had several indicators, namely, quality, fidelity and mode of counselling. The overall quality of counselling was rated at 90.5% with a difference in the overall quality of counselling between the study arms. Higher scores were observed in the nurses' arm and the community arm compared to the control arm. There was no significant difference between the nurses' arm and the community arm. Similarly, there was a high fidelity (92.8%) to counselling process across board with significant difference between the study arms. The nurses' arm and control arm had higher scores compared to the community arm. The difference in mean fidelity scores between the nurses' arm and the community arm was also statistically significant. The high fidelity to process score in control arm as compared to that in the community arm could be attributed to the fact that the control arm was implemented by the nurses who are the routine counsellors thus, could be because of tradition rather than efficacy. There was a significantly higher percentage of group counselling sessions in the control arm compared to the overall intervention arm, as determined by bivariate analysis. The finding that group counselling was more prevalent in the control group points to the widely practiced mode of counselling in routine ANC dubbed group ANC (GANC). Group counselling is central practice in group antenatal care

where health professionals facilitate groups of care to around 8–12 pregnant women with similar estimated due dates where group sessions replace traditional one-to-one appointments and last about two hours. Antenatal care is combined with information sharing and peer support through group discussions scaffolding from care giver to the participants (Wiggins *et al.*, 2020). In routine ANC care it has been shown to have tremendous outcome in encouraging ANC clinic attendance but for integrated services like counselling for PPFP it has not been researched.

5.4 Objective 1: Uptake of early PPFP

There was a high commencement rate of early PPFP within the study population, with 85.8% of individuals using early PPFP within the first 3 months of delivery. The overall positive inclination toward early PPFP (85.8%) is consistent with an interventional study in Uganda by Atukunda *et al.* (2019), which found similar levels of acceptance among postpartum individuals at 12 weeks although this was a study utilizing voucher system among HIV positive clients (Atukunda *et al.*, 2019). Equally, the idea that early engagement in FP is crucial is also emphasized by a 2015 study in rural Bangladesh (Ahmed *et al.*, 2015). Study arm in rural facilities had significantly higher rates (90.2%) of commencement of early PPFP compared to the urban setting arm (81.3%). Even though a systematic review and meta-analysis of postpartum contraceptive use among women in low- and middle-income countries by Dev *et al.* (2019) shows that rural areas have lower rates of uptake of FP, the current findings resonate with Zambian Study by Sserwanja *et al.* (2022) even though this was a cross-sectional survey among adolescents (Dev, Kohler, *et al.*, 2019; Sserwanja *et al.*, 2022). These trends suggest that while access to healthcare services might differ between rural and urban settings, cultural norms and awareness

levels also play significant roles as elucidated by Sedgh et al. (2016) systematic review on PPFP uptake and Onyango *et al.*, (2020) study in rural Western Kenya (Onyango *et al.*, 2020; Sedgh *et al.*, 2016). The current study did not evaluate factors that could have led to more uptake within the rural based arm compared to urban based facilities. Facility level dynamics could have come into play. Factors like the strength of community-facility linkage and provider-client relationships may explain the difference better than considering the intervention as the reason for the difference. It is worth noting that the specific characteristics and circumstances of the rural and urban study populations may also contribute to this difference in PPFP commencement rates. For example, the rural population may have different levels of access to healthcare, education, and other resources that could influence their decision to use PPFP as demonstrated by Rutaremwa et al. (2015). Other studies whose findings showed better uptake in urban facilities reasoned that factors, such as the availability and accessibility of different methods of PPFP, the quality and effectiveness of the counselling provided, and the cultural and social context of the study population (Anasel & Mlinga, 2014; MacHange & Munyogwa, 2022; Rutaremwa *et al.*, 2015).

The intervention arm had higher (90.9%) PPFP commencement rates of all the methods of FP compared to the control group (75.6%). Similarly, commencement of modern hormonal and non-hormonal methods was high (79.7%). This provides empirical support for the effectiveness of targeted interventions, a point echoed in a study in Uttar Pradesh in India (Rajan *et al.*, 2016). This indicates that healthcare programs tailored to the specific needs of the population can substantially boost the utilization of early PPFP. Despite the fact that well implemented intervention, appointment setting, and active follow-up can

account for these high levels of uptake, it is important to be cognizant of the fact that the inclusion criteria and selection criteria did not anticipate a regular intimate partner for the participant in the next 12 months, and the participant should have been attending ANC. These two facts can compound the reasons for the high likelihood of having FP and, secondly, they can introduce a selection bias towards those who already have good health seeking behaviour. The results also indicate that the PPFP commencement rate was higher in the nurses' arm (95.1%) compared to both the control arm (75.6%) and the community arm (86.6%). This finding complements the study by Harrington *et al.*, (2019) and Ochako *et al.*, (2015) that highlighted the importance of nurses in facilitating PPFP uptake (Harrington *et al.*, 2019; Ochako *et al.*, 2015). Tafa & Worku, 2021 also pointed out the significant role healthcare professionals play in reproductive decisions, supporting this study's assertion that the involvement of healthcare providers, especially nurses, is crucial (Tafa & Worku, 2021). Though, the overall finding that intervention arm generally had significantly higher early PPFP uptake rates compared to routine care suggest that the intervention, whether delivered by nurses or CHP, was effective in increasing the uptake of early PPFP as compared to the routine antenatal care. It is worth noting that the specific characteristics and circumstances of the study population and the intensity of the intervention may have contributed to these differences in PPFP commencement rates. That is why predictors of uptake and moderating effect of background factors have been explored in greater detail in the current study. Studies and reviews of interventions aimed at providing effective care during pregnancy and improving PPFP in low- and middle-income countries suggest that providing FP counselling during ANC increases uptake of PPFP. A systematic review by Hodgins *et al.* (2016) highlights the importance of including FP counselling during pregnancy, particularly in populations where women tend

to have short birth intervals. The authors note that there is a wealth of program experience from a variety of settings that demonstrates increased rates of PPFP through antenatal counselling (Hodgins *et al.*, 2016). Cleland *et al.*, (2015) found evidence from several countries that multiple FP counselling sessions during ANC led to a substantial increase in postpartum contraceptive use. Conversely, single, brief counselling sessions were found to have little to no impact on contraceptive use. These findings are supported by other studies which indicate that brief counselling sessions alone may not be sufficient to affect PPFP behaviours (Cleland *et al.*, 2015). In India, for example, a study conducted by Rajan *et al.* (2016) found no association between discussing FP during an antenatal visit from a Community Health Promoter and uptake of PPFP (Rajan *et al.*, 2016). In Tanzania, Keogh *et al.* (2015) found that including a 10-minute FP counselling session during ANC increased women's intention to use FP but not their actual use of a method after birth. Cleland *et al.*, (2015) also noted that combined antenatal and postnatal interventions had a positive impact on contraceptive use during the first year postpartum, highlighting the importance of integrating FP throughout the reproductive continuum of care (Cleland *et al.*, 2015; Keogh *et al.*, 2015). The conclusions of these studies underscore the importance of integrating FP counselling and services throughout the reproductive care continuum, starting from ANC, care during birth, and later contacts to help close the gap between intention and behaviour. ANC is a valuable time for FP counselling because more women receive ANC than postnatal care. By increasing the frequency of attendance at ANC, the chances of women receiving counselling on FP and other important health topics can be increased.

5.5 Objective 2: Attitude towards early PPFP

Average attitude towards early PPFP was skewed towards positive with 96.4% of the participants rated to be in the positive spectrum. Other studies showed comparable findings with studies in Ethiopia and Bangladesh showing that 90% and 78% of the participants expressed a positive attitude and interest in using a FP method after delivery, respectively (Hossain *et al.*, 2018; Tafa & Worku, 2021). A Nigerian study found that most of the participants had a positive attitude towards PPFP, with the majority indicating that they would prefer to receive FP services immediately after childbirth (Akamike *et al.*, 2020). While these studies showed the level of attitude towards early PPFP, they did not show what factors influenced attitude. Attitude towards PPFP can be influenced by a wide range of factors, for this study factors that could potentially influence attitude were clustered into sociodemographic factors, obstetric history, experience with FP, intimate partner relationship, and process related aspects. Only level of education had a significant effect on attitude towards early PPFP uptake. As the level of education increased, the odds of having a positive attitude towards early PPFP decreased. This suggests that individuals with higher levels of education may be less likely to have positive attitudes towards early PPFP. It is possible that there may be other factors that are correlated with both education level and attitude towards early PPFP, and that these factors may be responsible for the observed relationship between the two variables. It is worth noting that individuals with higher levels of education may be more likely to have access to misleading information and myths about PPFP and their side effects or cost, which may influence their attitudes towards early PPFP as was shown by study by Sedgh & Hussain (2014) which hinted at potential misconceptions accompanying higher levels of education (Sedgh & Hussain, 2014). Therefore, it is important to consider these and other potential confounding factors

when interpreting the results. Bekele et al (2020) and Elweshahi et al (2018) had contrary conclusions where higher levels of education positively influence attitude towards use of postpartum FP and reduced unmet need for FP (Bekele *et al.*, 2020; Elweshahi *et al.*, 2018).

Participants who had a comorbidity had significantly a negative attitude towards early PPFP uptake compared to their counterparts who did not have a comorbidity. Further, those who rated their health as being good were more than three times more likely to have a more positive attitude towards early PPFP than those who rated their post pregnancy health status as poor. Individuals with comorbidities may be more focused on managing their existing medical conditions and may have less time or energy to devote to learning about and considering FP options. Additionally, individuals with comorbidities may face financial or logistical barriers to accessing FP resources, which may impact their attitudes towards early PPFP (Rossier *et al.*, 2015). Therefore, it is important to consider these and other potential factors when interpreting the results of a study and designing interventions to promote women's attitude towards early PPFP services (Assenga *et al.*, 2022). On the contrary, study among HIV positive patients with other comorbidity such as sexually transmitted disease positively predicted attitude towards FP and actual use (Akelo *et al.*, 2013).

As much as good intimate partner relationship was shown not to have a significant positive effect on attitude towards early PPFP other studies have shown that individuals who have good relationships with their intimate partners may be more likely to discuss and make joint decisions about FP, which often lead to more positive attitudes towards early PPFP (Andualem *et al.*, 2022). Additionally, individuals who have good relationships with their

intimate partners may feel more supported and empowered to make decisions about their own health and well-being, which may also influence their attitudes towards early PPFP (Irani *et al.*, 2014).

Longer waiting and turnaround times for counselling was associated with more negative attitudes towards early PPFP. This may be due to factors such as frustration, inconvenience, or a sense of being rushed or rushed through the counselling process. Conversely, shorter waiting times and shorter turnaround times for counselling may be associated with more positive attitudes towards early PPFP, as they may be perceived as more efficient and convenient (Kyei-Nimakoh *et al.*, 2017; Puri *et al.*, 2020). It is imperative that targeted interventions are forethought to address the specific needs and challenges faced by individuals seeking counselling especially related to optimizing counselling turnaround time and reducing waiting time.

Analysis of difference in attitude towards PPFP between study arms revealed no significant difference in the mean attitude scores between arms echoing Rossier *et al.* (2014) who acknowledge the complex nature of attitudes toward FP. However, a cross-sectional Ethiopian study showed that a positive attitude increased the odds of FP uptake among women of reproductive age (WRA) (Bekele *et al.*, 2020). As much as this was an observational study and in a general population of WRA, its findings are significant in underpinning the importance of attitude on early PPFP. These findings by Bekele *et al.* (2020) are complemented by three other observational studies in different settings (Nigussie *et al.*, 2016; Semachew *et al.*, 2018; A. Singh *et al.*, 2016). These studies do not compare effectiveness of antenatal FP interventions in aligning women's FP attitude for better early PPFP uptake, but they underscore the complexity in understanding attitude of

women towards FP. This calls for studies that delve more into understanding attitude to inform multifaceted effective strategies for advocating for early PPFP.

5.6 Objective 3: Perceived social normative beliefs about early PPFP

The participants had a preponderance towards positive perceived normative beliefs about early PPFP with 75.2% being in the positive spectrum. The current finding suggests that a majority of the participants held positive beliefs about early PPFP, thus implying that early PPFP is considered normal or acceptable within their social or cultural group. A previous study in which messages on FP were delivered to women showed that exposure to these FP messages influenced perceptions towards postpartum contraceptives and their use in Ethiopia (Gonie *et al.*, 2018). Positive perceived normative beliefs about early PPFP may be associated with increased use of FP services and strategies thus need attention to services that positively enhance beliefs towards FP (Cannon *et al.*, 2022; Costenbader *et al.*, 2017).

Perceived normative beliefs about early PPFP are likely to be moderated by a wide range of factors. In the current research being married was shown to reduce the odds of having a positive perceived social normative belief on early PPFP. The relationship between marital status and perceived social normative beliefs about early PPFP is likely to be influenced by a wide range of factors like cultural and social norms around FP, family principles, religion, in-laws' perceptions about number of children one should have and early initiation of PPFP (Asif *et al.*, 2021; Costenbader *et al.*, 2019; Mbekenga *et al.*, 2013). These norms like partner views about early PPFP, in-laws' desire for more children, and others are unique to married women. Additionally, individuals who are married may face different challenges or have different priorities related to FP compared

to those who are not married, which may also impact their perceived social normative beliefs about early PPFP and ultimately PPFP utilization. Further, being employed increased the odds of having a positive perceived social normative belief on early PPFP. Employed individuals may have more access to information about and resources for FP, which may influence their perceived social normative beliefs about early PPFP. Likewise, it is more likely the social support networks of an employed person are likely to be more well enlightened and informed about PPFP than those of the unemployed counterparts thus, the employed client might have a more positive perceived normative belief on early PPFP (Ochako *et al.*, 2015).

Good intimate partner relationship increased perceived social normative beliefs on early PPFP. The quality of an individual's relationship with their intimate partner may affect their beliefs about what is considered normal or acceptable within their social or cultural group when it comes to early PPFP. A study by Abota *et al.*, 2022 shows that individuals who have good relationships with their intimate partners may be more likely to discuss and make joint decisions about FP, which may lead to more positive perceived social normative beliefs about early PPFP (Abota *et al.*, 2022). Conversely, individuals who have strained relationships with their intimate partners are less likely to discuss or agree on FP decisions, which may lead to more negative perceived social normative beliefs about early PPFP (Gage *et al.*, 2022).

The nurses' arm was more effective in enhancing positive perceived normative belief about early PPFP uptake as compared to community and control arms. Tessema *et al.* (2018) examined the role of health workers in shaping women's perceptions of early PPFP. The research revealed that these workers significantly influence women's views during

postpartum consultations. They can shift negative or neutral perceptions about early PPFP to positive ones. A key factor behind this impact is the trust women place in health workers especially those who can attend to their fears and hesitancy towards FP (Tessema *et al.*, 2018). Therefore, it is important to have well trained healthcare professionals who can respond to women's FP information needs especially during the antenatal period. The community arm did not have a significant difference with the control arm signaling the necessity to reimagine Community Health Promoter training on early PPFP and overall community outreach strategies, tailoring them to the unique needs of the population.

5.7 Objective 4: Perceived behavioural control of early PPFP choice

Participants had a generally high level of perceived control of PPFP choice, with 92.3% ranging in the moderately high, high, and very high spectrum of perceived control, hinting that most of the participants felt that they had a significant level of control over their FP choices. Perceived control refers to an individual's belief that they have the power to make decisions and influence events in their lives (Schlehofer & Suzanne, 2020). A high level of perceived control of PPFP choice may be associated with increased use of FP services and strategies, as individuals who feel that they have control over their FP decisions may be more likely to seek out information on PPFP and access to FP resources. Nevertheless, a low level of perceived control of PPFP choice may be associated with decreased use of FP services and strategies, as individuals who feel that they have limited control over their FP decisions may be less likely to seek out or use FP resources (Williams *et al.*, 2021).

Current study findings are in consensus with those of a Chinese study which established a high level of perceived control when it came to PPFP choice, with 92.3% of participants reporting that they felt they had a high level of control over their FP decisions. The study

surveyed women who had given birth within the past six months in Inner Mongolia and found that a majority of participants felt that they had the ability to make informed decisions about their FP and had access to the resources they needed to act on those decisions (Li *et al.*, 2019). Another study, qualitative, in Nepal also reported that most of the respondents had a high level of perceived control over their PPFP choice, The study surveyed women who had given birth within the past year and found that the majority of participants felt that they had the ability to make informed decisions about their FP and had access to the resources they needed to act on those decisions (Thapa *et al.*, 2019).

Sociodemographic factors, obstetric history of the client, previous FP experience, intimate partner relationship were assessed on how they may influence individual perceived control of PPFP choice. Being employed increased perceived individual control of early PPFP choice. This might be suggestive of the fact that individuals who are employed may have more access to information about and resources for FP, which may increase their perceived individual control of early PPFP choice as suggested by Ashebir & Tadesse, (2020) (Ashebir & Tadesse, 2020). Equally, Tilahun et al (2022) showed that if FP services have a cost implication, it is likely that someone who is employed has higher capacity of paying for the services. Notably, individuals who are not employed may have less access to these resources and may feel that they have less control over their FP decisions (Tilahun *et al.*, 2022).

Pregnancy-related aspects of the participants in the current study had no significant effect on perceived individual control of early PPFP choice. Nonetheless, as the number of ANC visits increased, having more children and having complications in pregnancy increased the odd of having a higher perceived individual control of early PPFP choice. On the

contrary, not being health educated after delivery reduced the odds of perceived individual control of early PPFP choice. Access to information about and resources for FP may influence an individual's perceived individual control of early PPFP choice. Individuals who receive health education about FP may feel that they have knowledge and thus, more control over their FP decisions compared to those who do not receive health education (Belayihun *et al.*, 2021; Eliason *et al.*, 2013).

The current study showed that an increase in rating of intimate partner relationship led to an increase in odds of perceived individual control of early PPFP choice. This proposes that the quality of an individual's relationship with their intimate partner may affect their belief that they have the power to make decisions and influence events related to their FP choices. Good intimate partner relationship between a couple is likely to facilitate a discussion on FP and make joint decisions about FP, which may increase their perceived individual control of early PPFP choice. As such, an individual who has a bad relationship with their intimate partner may be less likely to discuss or agree on FP decisions, which may decrease their perceived individual control of early PPFP choice (Harrington *et al.*, 2019; Willcox *et al.*, 2021).

Individual mode of counselling, and high fidelity to process increased the odds of perceived individual control of early PPFP choice. The format of counselling, as well as the fidelity to the counselling process, may influence an individual's perceived individual control of early PPFP choice. Lopez *et al.* (2014) shows that individualized counselling offers more opportunity to ask questions and express preferences, which may increase perceived individual control of early PPFP choice (Lopez *et al.*, 2014). Similarly, individuals who receive counselling with high fidelity to the process may feel that they are

receiving high quality and consistent care, leading to a high perceived individual control of early PPFP choice (Wiggins *et al.*, 2020).

The current study showed that both FP counselling waiting time and FP counselling turnaround time had an inverse relationship with perceived individual control of early PPFP choice whereby as each of increased, the odds of high perceived individual control of early PPFP choice reduced. This suggests that longer waiting and turnaround times for counselling may be associated with lower levels of perceived individual control of early PPFP choice. Long waiting and turnaround times for counselling may be perceived as barriers to accessing care, which may decrease an individual's perceived individual control of early PPFP choice. On the other hand, shorter waiting and turnaround times may be perceived as more accessible and convenient, which may increase an individual's perceived individual control of early PPFP choice (Lopez *et al.*, 2015; Puri *et al.*, 2020).

Intervention arms have demonstrated a significant effect on the perceived control of choice of early PPFP. Delving deeper into these findings, it becomes evident that the intervention led by nurses was particularly influential. In fact, the nurse-led intervention arm outperformed both the community-based intervention arm and the control group in terms of influencing perceived control. Such a pattern isn't surprising when viewed in the context of the broader scientific literature. Time and again, studies have shown that interventions spearheaded by healthcare workers, such as nurses, tend to have more pronounced impacts on the perception of control among recipients than interventions that are rooted in community-based approaches (Harrington *et al.*, 2019; Wegs *et al.*, 2016). One possible reason could be the inherent trust and credibility associated with healthcare professionals. When nurses or other healthcare workers guide an intervention, patients or

participants might feel more assured and informed, subsequently leading to a heightened sense of control. This isn't to say that community-based interventions are ineffective, but rather, their impact on perceived control might be different or less immediate compared to those led by healthcare professionals. As healthcare systems and policymakers strive to enhance the uptake and effectiveness of PPFP and similar interventions, these nuances in perceived control can be pivotal. Recognizing the differential impact of professional-led versus community-based interventions can inform targeted strategies that optimize outcomes and address the unique needs and perceptions of different populations (Mashal *et al.*, 2022).

5.8 Objective 5: Intention for early PPFP use

The study found that the participants had a high intention to use early postpartum family planning (PPFP), which was predicted by the client's age, number of children, and positive intimate partner relationship rating. The study also showed that counselling turnaround time, fidelity to the process, and accepting to set a postnatal appointment for early PPFP had a significant effect on the intention to use early PPFP. The intervention had an overall significant effect on client intention for early PPFP, with higher intention scores in the nurses' arm compared to the community and control arms.

Older women often exhibit a stronger intention to use early PPFP due to their increased pregnancy and childbirth experience, leading to a heightened desire to space or limit future pregnancies for their well-being and their children's welfare. Further, older women may be more in control of the decision to limit the number of children. The current study demonstrated that older participants had significantly higher intention to use early PPFP. While Navodani *et al.* (2017) highlighted similar trends in postpartum FP utilization

among older women with more children in Sri Lanka, conflicting findings were reported by Daba *et al.* (2021) and Ooko *et al.* (2022), indicating that younger clients expressed higher intentions for PPFP compared to older individuals (Daba *et al.*, 2021; Navodani *et al.*, 2017; Ooko *et al.*, 2022). The current study showed that those who had more children had increased odds of intention to use PPFP. Having more children can increase the intention to use early PPFP, as women may be more motivated to limit the number of their future pregnancies to optimize their well-being as well as that of their existing children (Tekelab *et al.*, 2015). Equally, having a partner can be a key determinant of intention for early PPFP. Supportive partners facilitate open communication and collaborative decision-making regarding FP, fostering shared responsibility and motivation to prevent unintended pregnancies. The current findings demonstrate the importance of good intimate partner relationship and the intention to use early PPFP. Findings from other studies were unanimous in showing the importance of supportive partners on intention for FP thus elucidating the fact that partner's support towards preventing unintended pregnancies are very key (Idowu *et al.*, 2015; Ngwenya *et al.*, 2020).

Process-related factors, particularly concerning the FP counselling process, setting postnatal appointment and FP counselling turnaround time significantly impact intentions (Grenier *et al.*, 2019; Jones *et al.*, 2020; Kabue *et al.*, 2018). The emphasis on efficient counselling processes and timely postnatal appointments in both Kabue *et al.* (2018) and Grenier *et al.* (2017) underline their importance in fostering positive intentions. Jones *et al.* (2020) suggests that when PPFP services are provided with high fidelity, it can lead to increased intention to use early PPFP methods as is the case with the current study. This is because women are more likely to receive accurate and comprehensive information about

the benefits and potential risks of these methods, and to have the opportunity to discuss their individual needs and preferences with a qualified provider. Setting postnatal appointment for early PPFP increased the intention for early PPFP shows that individuals who made plans to receive FP services in early postpartum period had a stronger motivation to prevent unintended pregnancy and were more willing to take steps to do so. FP Counselling turnaround had an inverse relationship with the intention to use early PPFP whereby as counselling turnaround time increased the odds of intention to use early PPFP reduced. This denotes that the time it takes to receive counselling may be a factor in an individual's desire or determination to use FP services and strategies during the early postpartum period so that individuals who received counselling in a shorter time period had a stronger motivation to prevent unintended pregnancy and were more willing to take steps to do so, while those who received counselling in a longer time period had a weaker motivation to do so. Fidelity to process in PPFP interventions is important as it increases the chances of women receiving accurate and comprehensive information about the benefits and potential risks of PPFP methods, as well as the opportunity to discuss their individual needs and preferences with a qualified provider, which in turn increases the intention to use early PPFP methods (Lopez *et al.*, 2014; Ngwenya *et al.*, 2020; Wiggins *et al.*, 2020).

The current research shows that the intervention arms positively influenced the intention to use early PPFP. Particularly, the nurses' intervention arm had a more pronounced effect on the intention to use early PPFP compared to both the community arm and control arms. Although research has supported the effectiveness of CHPs in increasing the uptake of RMNCH services, their interaction with clients for FP has been limited (Kumar *et al.*,

2020). Comparison from previous studies on nurses' versus CHPs' effectiveness in enhancing early PPFP through antenatal intervention was limited as there were no previous studies in a comparable population. Nurses' training and experience in providing FP could explain why their intervention had a more significant impact on women's intentions to seek early PPFP. These findings align with other studies conducted in Turkey, Ethiopia, Uganda and Kenya that established that antenatal counselling by skilled health workers led to higher rates of postpartum contraceptive use (Mutea *et al.*, 2022; Rutaremwa *et al.*, 2015; Tessema *et al.*, 2018; Vural *et al.*, 2016). It is not just the conveyance of information but the manner and credibility with which it's delivered that seems to make a difference. Furthermore, a systematic review by Lopez *et al.* (2015) established that interventions led by healthcare professionals had a higher likelihood of success in altering health behaviours compared to those led by non-professionals thus, supporting superior impact of the nurses' intervention arm and compared to the community arm (Lopez *et al.*, 2015). While the current study's findings showed no statistical difference in intention for early PPFP between the community arm and control arm, one systematic review has shown that CHP's information provision can be effective than standard care in influencing women's intention for PPFP (Scott *et al.*, 2015). It is also essential to recognize the value of community-led initiatives, which have their strengths, especially in creating peer support systems and disseminating knowledge at the grassroots level. But when it comes to the technicalities and nuances of subjects like early PPFP, the specialized knowledge of professionals, such as nurses, seems to carry more weight, as this research suggests.

5.9 Objective 6: Predictors of early PPFP uptake

The current study elucidated a strong relationship between general health education and uptake whereby being health educated in pregnancy increased the odds of using early PPFP by more than 4-fold. This proposes that individuals who received health education about FP during pregnancy were more likely to be aware of the options available for preventing unintended pregnancy and thus, more motivated to take steps to do so. Health education about FP during pregnancy can provide individuals with the necessary knowledge and skills to make informed decisions about their reproductive health and to take action to prevent unintended pregnancy. A 2019 study in Ghana concluded that strengthening FP education and counselling during antenatal care and using a multi-prong strategy to engage men as partners in FP improves postpartum contraceptive uptake (Coomson & Manu, 2019). The Ghanaian study had similar findings with the current study where FP counselling received during antenatal care increased the rate of postpartum uptake by about 4-fold. A study in Uganda and one in Rwanda showed that health education of mothers both in antenatal and postnatal period showed strong correlation with uptake of PPFP. The Rwandan study was more focused on postpartum IUD while the Ugandan study was a population cross-sectional study thus, wider generalizability (Kanakuze *et al.*, 2020; Rutaremwa *et al.*, 2015).

Intimate partner relationship refers to the nature of the relationship between individuals in a couple, including factors such as communication, decision-making, and support (Osamor & Grady, 2018). The current study demonstrated that good intimate partner relationship led to more than two-fold odds in uptake of early PPFP. This indicates that individuals who have no physical violence, psychological violence nor sexual violence in

their relationship, whose partner knows their intention to use PPFP, and frequently talk about FP have the required supportive and communicative relationship which can enhance use of FP services and strategies during the early postpartum period (Willcox *et al.*, 2021). This may be because these individuals feel more socially supported and empowered to make decisions about their reproductive health, or because they have better communication with their partners about their FP preferences and needs (Hamon *et al.*, 2022; Sumit *et al.*, 2016). Other researches have shown that factors such as communication, trust, and power dynamics within the relationship may affect an individual's ability to make decisions about their reproductive health and use of contraception. Such that, an individual who has a positive and supportive relationship with their partner, may feel much able to discuss and make decisions about PPFP together (Abera *et al.*, 2015; Chhabra *et al.*, 2016). Conversely, if an individual experiences coercion or control within their relationship, they may be less able to use PPFP or may feel pressure to use a particular method. The Kenya national reproductive health policy 2022-2032 recognizes the importance of intimate partner relationship in reproductive health outcomes and proposes screen during antenatal care. This is in cue of instituting measures to restore partner collaboration in health care seeking and making reproductive health decisions (MOH, 2022). Partner support has a complex relationship in determining uptake of health interventions like level of education, age difference between partners, information access, prevailing social norms, past relationship dynamics and drug and substance abuse. These aspects need to be forethought in interpreting outcome and planning reproductive health interventions (Fawole & Adeoye, 2015; Jaoko, 2010; Tsedal *et al.*, 2020).

The finding that counselling turnaround time has an effect on early PPFP uptake may indicate that individuals who receive counselling in a shorter time period are more likely to make use of FP services and strategies during the early postpartum period, while those whose counselling time is longer are less likely to do so. The current research findings are corroborated by earlier studies which showed that timeliness of counselling for FP was an indicator of FP uptake (Chhabra *et al.*, 2016; Sheriar *et al.*, 2014). Individuals receiving counselling in a shorter time period deem the counselling to be of quality, less time wasting, thus, mindful of the client. The clients, therefore, are more motivated to utilize the FP services and strategies when they are readily available (Williams *et al.*, 2022). Likewise, turnaround time for counselling may affect an individual's ability to access and receive information about PPFP in a timely manner, which could influence their decision to use it. The level of knowledge of the service provider about PPFP may also impact the quality and effectiveness of the counselling provided, which could influence an individual's decision to use PPFP (Kanakuze *et al.*, 2020).

Group counselling refers to the process of providing counselling to a group of individuals, rather than to individuals on a one-on-one basis (Kabue *et al.*, 2018). The finding that being counselled in a group setting reduces the odds of uptake of early PPFP may indicate that individuals who receive counselling in a group setting are less likely to make use of FP services and strategies during the early postpartum period, compared to those who receive counselling on a one-on-one basis. This is despite the fact that women's contraceptive decisions are more pegged to social networks norms (Comfort *et al.*, 2021). This finding is similar to those in a study in Nepal and another that was based in Nigeria and Kenya where despite the fact that group counselling increased ANC attendance and in some cases the

number of hospital births, none of the studies recorded significant numbers in postpartum FP uptake. One of the finding was that the level of FP information for those who were counselled in group was low and that the main sources of FP information were not healthcare providers. Likewise, group counselling may not be as tailored to the specific needs and preferences of individual clients, or because it may be less confidential thus, low uptake (Grenier *et al.*, 2019; Puri *et al.*, 2020). Other studies have corroborated this finding, albeit indirectly, that being counselled on an individual basis enhances the uptake of early PPFP. The studies posit that individual counselling is more personalized to the specific needs and preferences of individual clients, or because it may be more private and confidential (Cavallaro *et al.*, 2020; Holt *et al.*, 2017; Lori *et al.*, 2018). On the contrary, a study by Schwandt *et al.*, 2013 showed group counselling was just as effective in enhancing uptake of FP in postpartum period (Schwandt *et al.*, 2013). However, this was an isolated finding without further corroboration by other studies.

The finding that setting a postnatal appointment increases the uptake of PPFP by 2-fold suggests that individuals who make an appointment for FP services and strategies are more likely to follow through with using these services and strategies, compared to those who do not make an appointment. Making an appointment is behavioural contracting which psychologically makes the person setting an appointment to desire to reduce psychological dissonance by acting in line with what they contracted for, the desired behaviour, in this case early uptake of PPFP (Bosch-Capblanch *et al.*, 2007; Neale, 1991). Therefore, appointment setting for PPFP helps to ensure that individuals are able to access the early PPFP services at a time that is convenient for them through creating a sense of commitment and accountability to follow through with the set target. Setting a postnatal

appointment for PPFP may also help ensure that an individual has an opportunity to discuss and consider their options for contraception and decide about whether and when to start using PPFP. These findings are similar to Osinowo *et al.*, 2020 study in which it was established that the appointment cards served as a vital reminder to those seeking PPFP (Cavallaro *et al.*, 2018; Osinowo *et al.*, 2020).

The current study established that perceived normative belief about early PPFP influences early PPFP uptake indicates that individuals who perceive that it is socially acceptable or normal to use early PPFP services are more likely to use early PPFP, compared to those who perceive that it is not socially acceptable or normal to do so. Individuals who perceive that it is socially acceptable to use FP services and strategies during the early postpartum period feel more socially supported and encouraged to do so. Perceived normative beliefs can play a significant role in shaping an individual's uptake of early PPFP. These beliefs refer to the perceived attitudes and values of those around an individual regarding a particular behaviour. In the case of PPFP, perceived normative beliefs can influence whether or not a woman chooses to use PPFP methods immediately after giving birth (Gage *et al.*, 2021). Research has shown that perceived social norms can have a powerful effect on PPFP uptake. Studies conducted in Nigeria found that women who perceived that their community approved of early PPFP were more likely to use it than those who did not perceive such approval (Cannon *et al.*, 2022; Sahay, 2018). Similarly, Indian studies established that women who perceived that their family approved of PPFP were more likely to use it than those who did not (Sahu *et al.*, 2017; M. Singh *et al.*, 2015). Another study conducted in Ethiopia found that women who perceived that their partners approved of early PPFP were more likely to use it than those who did not (Ashebir & Tadesse, 2020).

In contrast, if an individual perceives that their community or family disapproves of early PPFp and sees it as inappropriate or unnecessary, they may be less likely to use it. This perception of social disapproval can act as a barrier to early PPFp uptake. Pakistani studies found that women who perceived that their community disapproved of PPFp were less likely to use it than those who did not perceive such disapproval (Asif *et al.*, 2021; Farid-ul-Hasnain *et al.*, 2013). A study conducted in Bangladesh found that women who perceived that their family disapproved of early PPFp were less likely to use it than those who did not perceive such disapproval (Hossain *et al.*, 2018). Therefore, perceived normative beliefs can have a significant impact on early PPFp uptake, and it's essential to take these beliefs into consideration when designing and implementing PPFp programs. These beliefs can vary greatly between communities, cultures, and individuals, and can change over time, so it's important to be aware of these variations and to continuously gather data and feedback from the community to understand their perception and to adapt the PPFp program accordingly. Additionally, health care providers play an important role in shaping the perceived normative belief of their patients. When providers discuss the importance of early PPFp and provide education on the benefits of using PPFp soon after giving birth, they can help to change the perceived normative belief of their patients and make it more likely that they will use PPFp. A study conducted in Nigeria, for example, found that when health care providers discussed the importance of early PPFp with new mothers, it increased the uptake of PPFp among those women (Akamike *et al.*, 2020). Furthermore, community-based interventions, such as community mobilization and health education campaigns, can also be effective in changing the perceived normative belief regarding early PPFp and increasing its uptake. A study in Ethiopia found that a community-based intervention that included health education and community

mobilization activities significantly increased the uptake of early PPFP among women in the intervention group compared to the control group (Alemayehu *et al.*, 2021).

The current study showed that perceived behavioural control of PPFP choice is a determinant of early PPFP uptake. In the context of early PPFP, perceived behavioural control would be an individual's belief in their ability to access and utilize PPFP services soon after giving birth. The current findings illustrate that individuals who perceive that they have a high level of control over their FP choices are more likely to make use of these services and strategies, compared to those who perceive that they have a low level of control. This may be because individuals who perceive that they have a high level of control over their FP choices feel more empowered and confident in their ability to make and follow through with decisions about using these services and strategies, or because they have more access to accurate information and resources about these services and strategies (Moreira *et al.*, 2019). Individuals who perceive that they have a high level of behavioural control may be more likely to engage in the behaviour, while those who perceive that they have a low level of behavioural control may be less likely to do so. Perceived behavioural control can be influenced by a variety of factors, including access to information, availability of resources and services, and social and cultural norms. For example, if an individual perceives that they have access to information and resources related to PPFP, they may be more likely to use PPFP soon after giving birth. Similarly, if an individual perceives that the social and cultural norms of their community support the use of PPFP soon after giving birth, they may be more likely to use it themselves (Shattuck *et al.*, 2011). Perceived behavioural control is an important determinant of early PPFP uptake. It is important to ensure that individuals have access to information and resources

related to PPFP and that the social and cultural norms of their community support the use of PPFP soon after giving birth. Additionally, healthcare providers play a vital role in shaping the perceived behavioural control of individuals by providing comprehensive and quality services. Furthermore, factors such as socio-economic status, education level, and access to transportation also play a role in shaping the perceived behavioural control and should be considered when developing interventions to increase early PPFP uptake (Gage *et al.*, 2021, 2022).

The finding that intention to use early PPFP is a predictor of early PPFP uptake may indicate that individuals who have a strong intention to use these services and strategies are more likely to actually use them, compared to those who have a weak intention to do so. This may be because individuals who have a strong intention to use FP services and strategies have made a conscious decision to do so, or because they have taken steps to plan and prepare for using these services and strategies (Costenbader *et al.*, 2019). The relationship between the intention to use PPFP and actual uptake of PPFP has been studied in a number of settings, and the results have been consistent. For example, a study conducted in Ethiopia found that women who had an intention to use PPFP were more than three times as likely to actually use PPFP as those who did not intend to use it (Abraha *et al.*, 2018). Similarly, studies conducted in DRC Congo found that women who had an intention to use PPFP were more than four times as likely to actually use PPFP as those who did not intend to use it (Gage *et al.*, 2021). In addition to these studies, a systematic review of the literature on the relationship between the intention to use PPFP and actual uptake of PPFP found that there is a strong and consistent relationship between these two factors (Dev, Kohler, *et al.*, 2019). The review included studies from a variety of settings,

including Africa, Asia, and Latin America, and found that the relationship between intention to use PPFP and actual uptake of PPFP is similar across these settings. One possible explanation for the relationship between intention to use PPFP and actual uptake of PPFP is that women who intend to use PPFP are more likely to have information about the benefits of PPFP and to have access to PPFP services. Additionally, women who intend to use PPFP may be more likely to have the support of their partners and families in using PPFP. A study conducted in Tanzania found that women who received support from their partners were more likely to intend to use PPFP and use it as well (Keogh *et al.*, 2015). The relationship between intention to use PPFP and actual uptake of PPFP is not always straightforward. For example, a study conducted in Nepal found that although most women intended to use PPFP, many did not actually use it due to a lack of information about PPFP and a lack of access to PPFP services (Thapa *et al.*, 2019, 2020). Similarly, a study in Cameroon found that despite a high intention to use PPFP, the uptake was low due to lack of availability of PPFP methods and lack of counselling on the same (Nansseu *et al.*, 2015). Therefore, a woman's intention to use PPFP is a strong predictor of her actual uptake of PPFP. This highlights the importance of providing accurate information about PPFP and increasing access to PPFP services in order to increase the uptake of PPFP. Additionally, addressing barriers such as lack of support from partners and families, lack of availability of methods and lack of counselling can also play a crucial role in increasing the uptake of PPFP (WHO, 2013b).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Overview

This chapter consists of the conclusion and recommendation of the study starting with a general introduction and then conclusions for every specific objective and recommendations per specific conclusion made.

6.2 Introduction

This study aimed to address several key questions related to the early uptake PPFP among mothers in Kisumu County. Specifically, it sought to compare the rate of early PPFP uptake between mothers in control and intervention groups. It also investigated how the intervention influenced various factors, including individual attitudes toward early PPFP, perceived social norms, individual control over PPFP choices, and intentions for future use of PPFP. Additionally, the study endeavored to identify the determinants affecting the early uptake of PPFP within the study population.

To systematically examine these issues, the study tested a set of research hypotheses. First, it questioned whether there was a statistically significant difference in early PPFP uptake between the intervention and control groups. Second, it hypothesized that individual attitudes toward early PPFP uptake would be similar in both groups. Third, the researcher posited that the perceived social normative beliefs surrounding early PPFP uptake would be the same for mothers in both the control and intervention groups. Fourth, the study examined if there was a statistical difference in individual control over PPFP choices between the two groups. Finally, the study investigated whether fertility intentions regarding early PPFP uptake were similar between the intervention and control groups.

The results of this study provided valuable insights into these critical questions, which are elaborated below.

6.3 Conclusion

6.3.1 Objective 1: Uptake of early PPFP

1. The study concludes that there was a significant difference in early PPFP uptake between the intervention group and the control group with the uptake in the intervention group being approximately 3 times that in the control group.
2. The study demonstrated a higher uptake among the participants in the nurses' arm as compared to the control and community arms with no demonstrable difference between the community and control arms.

6.3.2 Objective 2: Attitude toward early PPFP

1. The study showed that there was a highly positive attitude toward early PPFP among the participants in the study with no difference in attitude between the intervention and control arms.
2. The study found out that having a comorbidity, longer waiting times, and longer turnaround times for counselling were associated with more negative attitudes toward early PPFP.

6.3.3 Objective 3: Perceived social normative beliefs about early PPFP

1. The study found that the majority of participants held positive perceived normative beliefs about early PPFP.
2. The participants in the nurses' arm exhibited higher positive beliefs compared to the control and community arms.

3. The study demonstrated that employment and a positive intimate partner relationship increased the likelihood of positive beliefs, while marriage decreased these odds.

6.3.4 Objective 4: Perceived behavioural control of early PPFP choice

1. The study demonstrated that a majority of the participants had a high level of perceived control over their PPFP choices with more perceived individual control of PPFP choice in the nurses' arm compared to the community and control arms.
2. The study elucidated that being employed, having a good intimate partner relationship, individual mode of counselling, and fidelity to the counselling process positively influence perceived individual control of early PPFP.
3. The study showed that not being health educated after delivery, longer waiting time, and longer turnaround time for counselling reduced the odds of perceived individual control of early PPFP.

6.3.5 Objective 5: Intention for early PPFP use

1. The study concludes that there was a higher intention in the nurses' arm compared to the community and control arms.
2. It was shown that older participants, having more children, good intimate partner relationships, high fidelity to the counselling process, and setting a postnatal appointment for early PPFP positively predicted intention to use early PPFP. On the contrary, not being educated about FP in pregnancy and longer turnaround times for counselling reduced the odds of intention to use early PPFP.

6.3.6 Objective 6: Predictors of early PPFP uptake

1. The study demonstrated that being health educated in pregnancy, having a good intimate partner relationship, setting a postnatal appointment for PPFP uptake, perceived positive normative beliefs about early PPFP, and perceived behavioural control of PPFP choice, and a high intention to use early PPFP positively predicted the actual use early PPFP.
2. High turnaround time for FP counselling and being counselled in a group reduced the odds of uptake of early PPFP.

6.3.7 Hypothesis-based conclusions

1. The study demonstrated a statistically significant difference between the intervention and control groups in PPFP uptake.
2. There was no statistically significant difference between the intervention and control groups in individual attitude towards early PPFP uptake among postpartum mothers in Kisumu County.
3. The study demonstrated a statistically significant difference in perceived social normative beliefs towards early PPFP uptake between the intervention and control groups in Kisumu County.
4. The study concluded that there was a statistically significant difference in the perceived individual control of early PPFP choice between the intervention group and the control group in Kisumu County.
5. A statistically significant difference was demonstrated in the intentions for early PPFP among postpartum mothers between the intervention and control groups in Kisumu County.

6.4 Recommendations

6.4.1 Objective 1: Uptake of early PPFP

1. The study recommends the promotion of nurse-led targeted antenatal FP counselling to improve; perceived normative beliefs about early PPFP, perceived individual control of PPFP choice, intention for early PPFP use and ultimately early PPFP uptake.

6.4.2 Objective 2: Attitude toward early PPFP

1. The study proposes a need for targeted information campaigns to address negative attitudes associated with comorbidities with emphasizing the safety and benefits of early PPFP for individuals with comorbid conditions. Equally, the health care system needs to implement measures that improve on quality of counselling by reducing waiting time and optimizing turnaround time for counselling to improve overall attitudes towards early PPFP.

6.4.3 Objective 3: Perceived social normative beliefs about early PPFP

1. There is need to strengthen antenatal family planning counselling led by nurses to increase positive perceived normative beliefs about early PPFP. Additionally, addressing factors such as employment opportunities for women and fostering positive intimate partner relationships is vital in enhancing perceived normative beliefs towards early PPFP. Lastly, it is important to explore strategies to counter the negative impact of marriage on perceived beliefs is also recommended.

6.4.4 Objective 4: Perceived behavioural control of early PPFP choice

1. The study recommends implementing nurse-led measures to streamline counselling processes that reduce waiting and turnaround times, and foster the involvement of intimate partners in counselling sessions thereby enhancing perceived individual control of early PPFP choice.
2. Develop targeted postpartum health education programs, specifically focusing on individuals who were not health educated after delivery. This can address knowledge gaps and empower individuals to feel more in control of their PPFP choices.
3. Encourage and promote individual counselling sessions, as they have been identified as positively influencing perceived individual control. This may involve adapting counselling services to better accommodate individual preferences and needs.

6.4.5 Objective 5: Intention for early PPFP use

1. The study recommends nurse-led targeted antenatal counselling with high fidelity to the counselling process and use of postpartum FP appointment setting to reduce waiting time and counselling turnaround time. These nurses should be able to address the specific needs and concerns of different age groups and individuals with larger families. This counselling should also foster good intimate partner relationships through involving partners in counselling sessions and educational programs to strengthen support systems.

6.4.6 Objective 6: Predictors of early PPFP uptake

1. The study recommends the implementation of a holistic approach that combines targeted antenatal PPFP counselling, fostering good intimate partner relationships, and setting postnatal appointments to positively predict early PPFP use.
2. The study places emphasis on individualized counselling over group counselling to increase the odds of early PPFP uptake.

6.5 Further research

1. Given the identified limitation associated with selection bias in the current study, it is recommended that future studies should employ a more inclusive participant recruitment strategy that goes beyond those exclusively engaged in antenatal care (ANC). This may involve actively seeking participants from diverse sources within the community, including those who are not attending ANC clinics. By broadening the participant pool, researchers can mitigate the potential influence of selection bias and enhance the generalizability of findings to the broader population of pregnant women.
2. Secondly, to enhance the comprehensiveness of future studies on family planning (FP) counselling during pregnancy, it is recommended that future studies consider recruiting participants earlier in pregnancy. While the current study focused on the practicality of targeting participants in the second and third trimesters, recruiting individuals in the first trimester can provide valuable insights into factors influencing women's decisions about FP. This approach would allow researchers to explore aspects such as the impact of early intervention and the number of antenatal contacts for FP counselling, thereby addressing potential limitations identified in the current study design.

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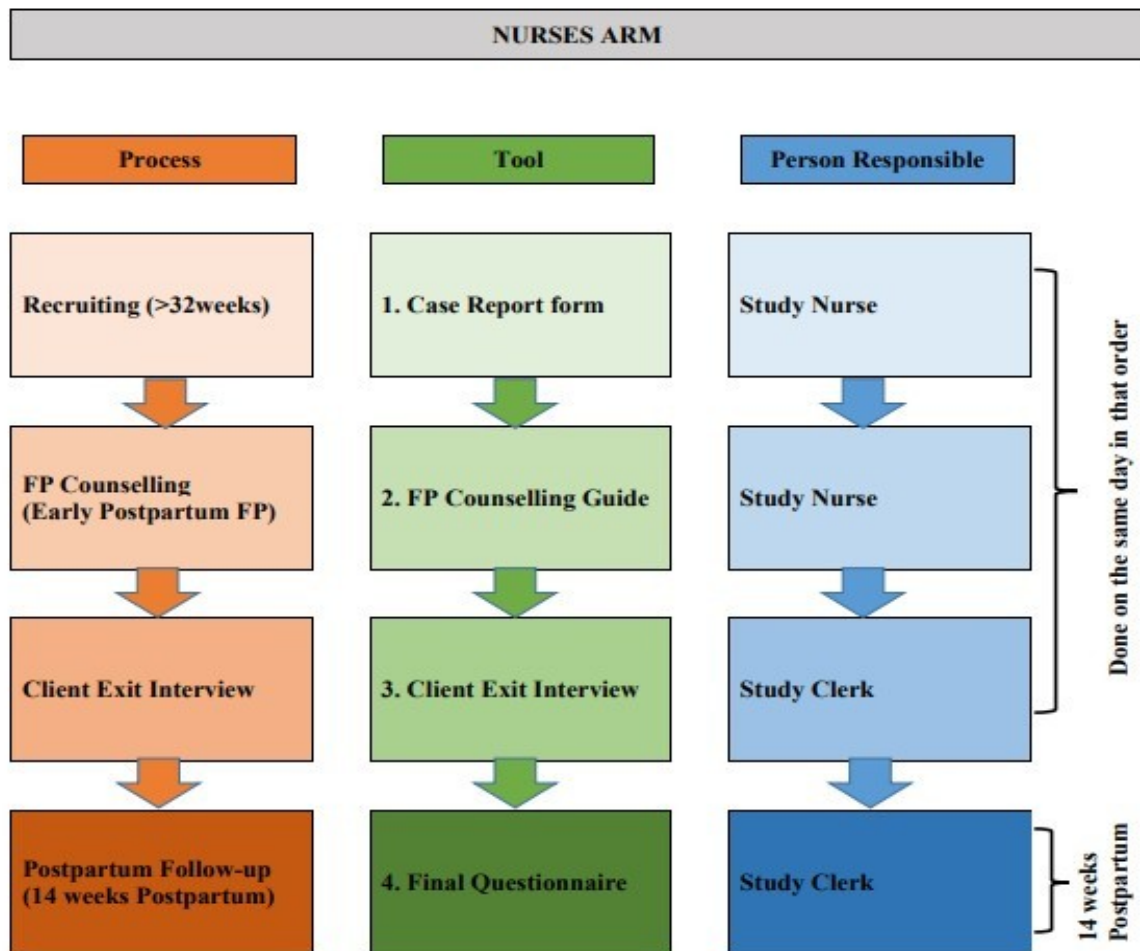
APPENDICES

Appendix 1: Map of the study area



(Google Maps, 2017)

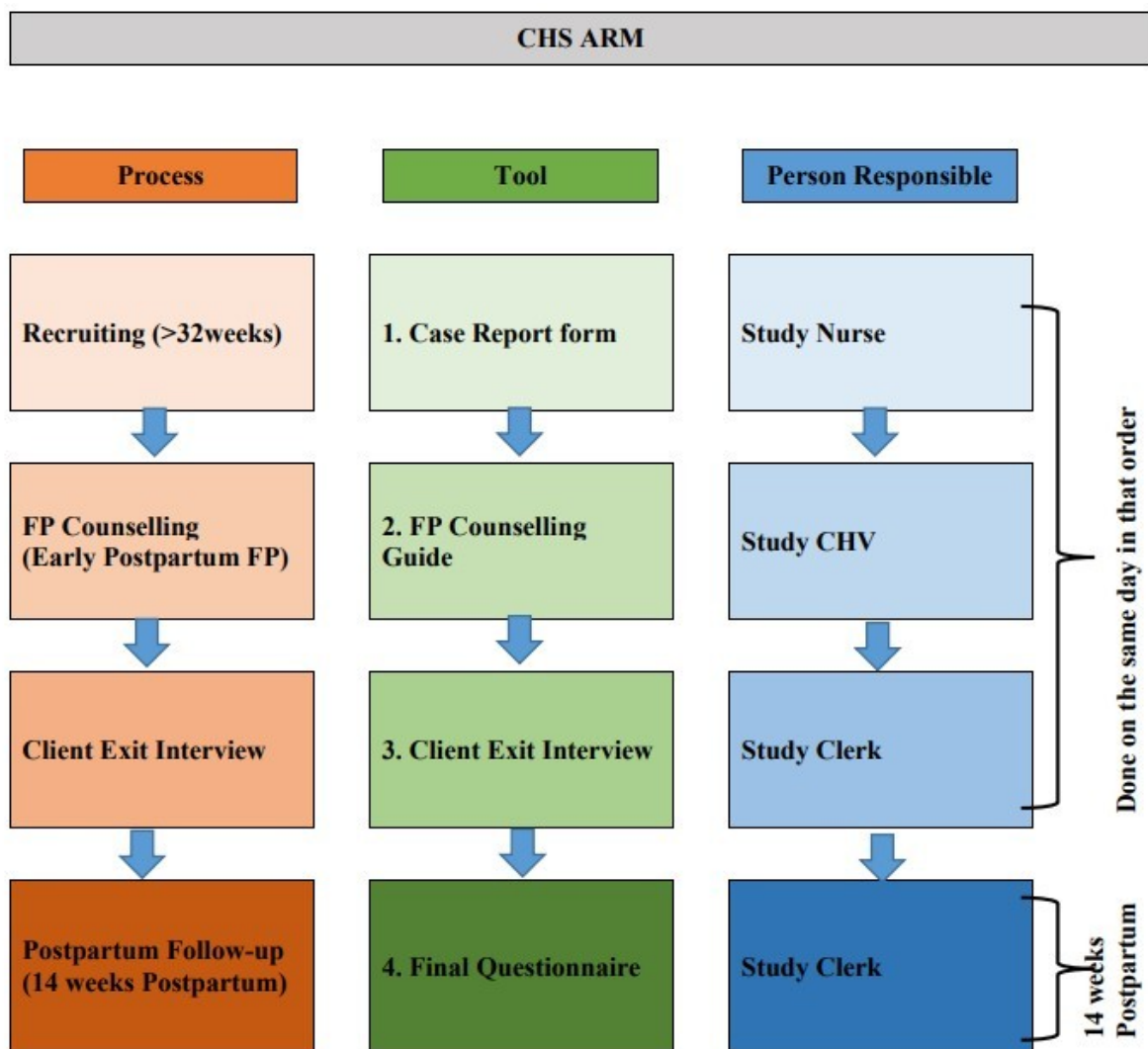
Appendix 2:Nurses' Arm Flow Chart



Notes

1. Recruit clients above 32 weeks gestation to reduce prolonged periods of follow-up
2. FP counselling should be more focused on immediate and early postpartum eligibility
3. The first 3 tools to be administered on the same day in that succession
4. Postpartum follow-up can be integrated to 3rd Immunization date (14 weeks postpartum)

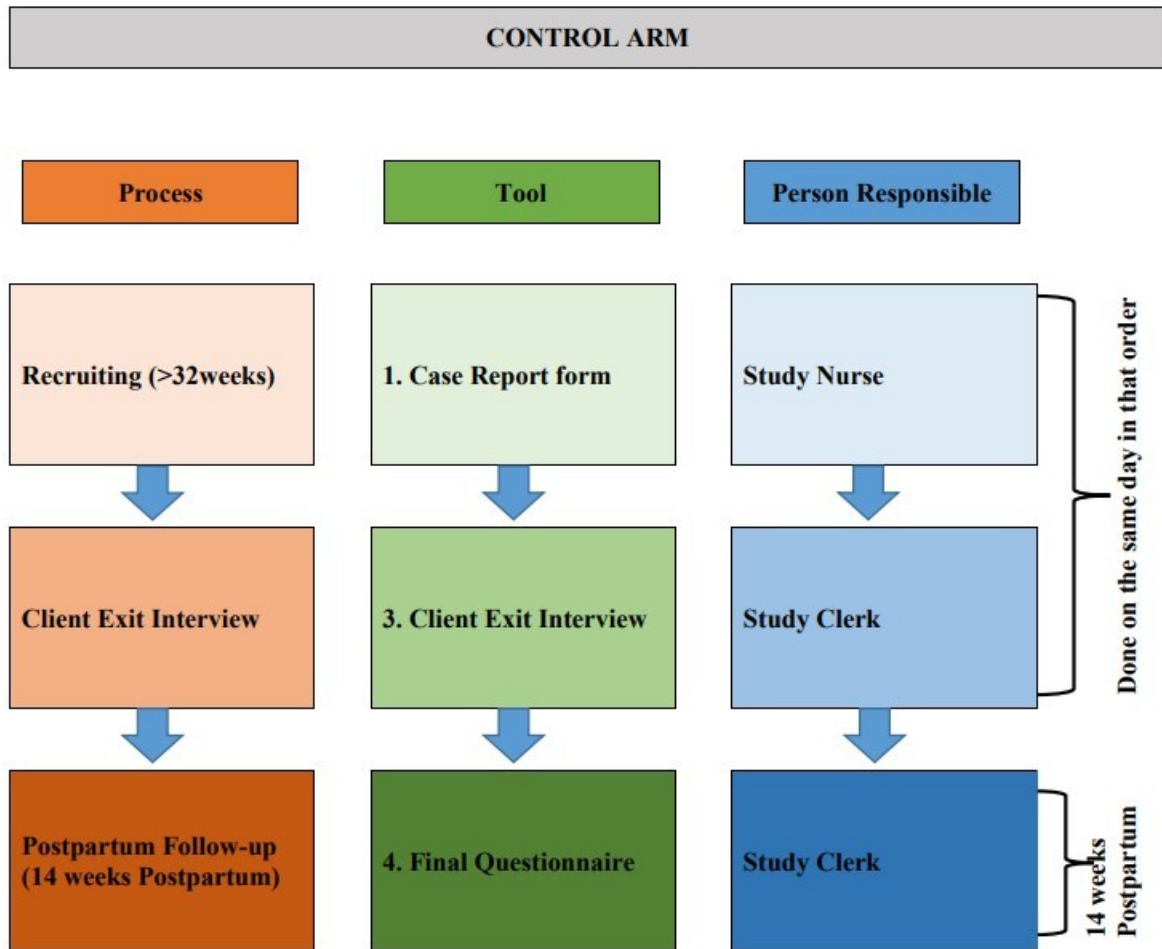
Appendix 3: Community Arm Flow Chart



Notes

1. Recruit clients above 32 weeks gestation to reduce prolonged periods of follow-up
2. FP counselling should be more focused on immediate and early postpartum eligibility
3. The first 3 tools to be administered on the same day in that succession
4. Postpartum follow-up can be integrated to 3rd Immunization date (14 weeks postpartum)

Appendix 4: Control Arm Flow Chart



Notes

1. Recruit clients above 32 weeks gestation to reduce prolonged periods of follow-up
3. Tools 1 and 2 to be administered on the same day in that succession
4. Postpartum follow-up can be integrated to 3rd Immunization date (14 weeks postpartum)

Appendix 5: Counselling Tool

a. General Guide on basics of Counselling (Hard copy)

STUDY TITLE:	Effectiveness of Targeted Antenatal Family Planning Information Provision on Early Postpartum Family Planning Uptake in Kisumu County, Kenya
DOCUMENT	Standard Operating Procedures for Nurse Counsellors Offering Antenatal Family Planning Counselling
SOP Version No.	1
Date:	17TH MARCH 2020

Purpose of this counselling.

The main objective of this family planning (FP) counselling is to help women understand the role of FP postpartum and help them decide voluntarily on the contraception method they wish to have during postpartum period to avert adverse inter-

pregnancy spacing. You can help them to choose a contraceptive method that is personally and medically appropriate based on the eligibility criteria for postpartum period. Through your counselling sessions with them, you will make sure that they understand the benefits and side effects of each method and how each of them is used correctly, to ensure informed decisions, safe and effective contraceptive use. Counselling will be done face-to-face in a private space provided in the study facility.

Steps for conducting family planning counselling.

1. **Carefully prepare yourself** to have good scientific knowledge of all the contraceptive methods, and understand the practical part of FP methods. You should be prepared to give an overview of the FP methods and answer ALL questions comfortably and without embarrassment in relation to contraceptive myths, rumours, sexuality, infertility, sexually transmitted infections (STIs), HIV/AIDS, reproductive and personal concerns

2. Important to NOTE:

Please remember that FP counselling is not a type of lecture from you to those who need your help

Show utmost respect to the participant that you are counselling, and deal/respond to their problems/concerns about contraception in an honest straightforward way. Give and maintain the participant assurance of confidentiality while counselling ensure a private and quiet place provided for the sessions at all time.

Take sufficient time to explain and listen to the participant's questions and concerns. Be empathetic at all time.

Look out for myths and misinformation participants have about FP and respectfully take time to provide accurate information.

Find out participants' views about contraception and child birth by encouraging them to talk.

Avoid direct and judgmental questions such as: 'Are you one of those people who believe that modern FP is forbidden for religious people?' Such questions sound critical and can make people feel inferior, or may make them mistrust you because they may ask themselves, "Why should I believe this person when all my relatives share my belief?"

Use simple terminologies that are easily understood by the participants.

Use the provided visual aids to explain the different contraceptive methods and avoid giving too much information to avoid confusion.

Repeat the most important instructions about FP again and again. Always test participants' understanding before leaving the room.

Try to understand, and be sensitive to cultural and psychological factors that may affect participants in their communities from adopting and using FP methods or on limiting child birth. **Please note:** Some methods may be unpopular with participants, for example a woman might not like the idea of having to insert a contraceptive into her body before having sex, or a man may think that a condom will take away the pleasure of sex.

Some methods like cervical cap, may not be widely available in Kenya and others may not be regular and reliable. Please honestly discuss this with the participant, indicating other available alternative methods and where they can be accessed easily

3. Carefully and with a lot of sensitivity to individual needs, use a step-by-step approach

(GATHER) to remember to employ the 6 steps to help you offer effective FP counselling.

G Greet the participant with due respect

A Ask the client about their contraceptive needs.

T Tell the client more about different contraceptive option and methods.

H Help the client to make the right decisions about choice of FP methods.

E Explain and demonstrate to the client how to use the desired methods.

R Return date/refer; Schedule and carry out a return visit and follow up.

Note: ***Carefully define family planning in a manner that is well understood by the participant.***

4. Provide method-

specific counselling by giving more information about the chosen method. Please explain the eligibility and instruct on how and when to use the method using the BRAIDED approach, and emphasize on the reminder information included on the appointment card. Please tell the participants when to return for follow-up, and ask them to repeat what you have said on key information.

BRAIDED APPROACH:

B Benefits of the methods that is desired

R Risks of the desired method including risk of failure

A Alternatives to the method (including abstinence and no method)

I Inquiries about the method (individual's right and responsibility to ask)

D Decision to withdraw from a method of FP with repercussions

E Explaining more about the chosen method in detail

D Documenting the session in the right documents

5. **Schedule a convenient follow-up review date that tallies with her postnatal visit**, immunization visit or routine ART clinic to discuss/
review concerns, questions and manage any problems and side effects related to the given contraceptive method, and to encourage the continued use of the chosen method if no problems are reported.

Checklist for Counselling		
Key areas for counselling (Circle [1] Yes if covered or [2] for No if not)	Yes [1]	No [2]
1. Carefully define family planning	[1]	[2]
2. Discuss family size	[1]	[2]
3. Respectfully explain benefits/ the need to start family planning/ delay child birth	[1]	[2]
4. Discuss effectiveness of contraceptive methods	[1]	[2]
5. Discuss available contraceptive methods, where to access them	[1]	[2]
6. Medical eligibility for Postpartum use of different contraceptive methods	[1]	[2]
7. Dual contraception	[1]	[2]
8. When to start immediate postpartum contraception using eligibility criteria	[1]	[2]
9. Demonstrate/discuss how to use methods	[1]	[2]
10. Discuss potential side effects	[1]	[2]

11. Check understanding	[1]	[2]
12. Allow questions	[1]	[2]
13. Repeat/summarise key information	[1]	[2]
14. Explain information on the appointment card	[1]	[2]
15. Book for family planning of choice, or refer	[1]	[2]
16. Provide review date	[1]	[2]
6. Details on the GATHER approach G-Greet the participant In the first case, give your full attention to your participants. Greet them in a respectful manner and introduce yourself after offering seats. Ask them how you can help them. Tell them that you will not tell others what they say. If the counselling is in a health institution, you have to explain what will happen during the visit, describing physical examinations and laboratory tests if necessary. Conduct counselling in a place where no-one can overhear your conversation. A-Ask the participants about themselves Help them to talk about their needs, doubts, concerns and any questions they might have. If they are new, use a standard checklist or form from your Health Management Information system to write down their name and age, marital status, number of pregnancies, number of births, number of living children, current and past family planning use, and basic medical history. Explain that you are asking for this information in order to help you to provide appropriate information, so that they can choose the family planning method which is the best for them. Keep questions simple and brief, and look at her/them as you speak. Many people do not know the names of diseases or medical conditions. Ask them specific questions. Say, 'Have you had any headaches in the past two weeks?', or 'Have you had any genital itching?', or 'Do you experience any pain when urinating?' Do not say, 'Have you had any diseases in the recent past'. If you have seen the participant(s) previously, ask if anything has changed since the last visit. T-Tell them all about family planning methods Tell them which methods are available.		

Ask which methods interest them and what they know about the methods.

Briefly describe each method of interest and explain how it works, its advantages and disadvantages, and possible side-effects.

H-Help them to choose a method

To help them choose a method of contraception, ask them about their plans and family situation. If they are uncertain about the future, begin with the present situation.

Ask what the spouse/partner likes and wants to use.

Ask if there is anything they cannot understand, and repeat information when necessary.

When the chosen method is not safe for them, explain clearly why the method may not be appropriate and help them choose another method.

Check whether they have made a clear decision and specifically ask, 'What method have you decided to use?'

E-Explain how to use a method After a method has been chosen:

Give supplies if appropriate.

If the method cannot be given immediately, explain how, when and where it will be provided.

For methods like voluntary sterilization the participant will have to sign a consent form. The form says that they want the method, have been informed about it, and understand this information. You must help the individual understand the consent form.

Explain how to use the method.

Ask the participant to repeat the instructions.

Describe any possible side-

effects and warning signs, and tell them what to do if they occur. Ask them to repeat this information back to you.

Give them printed material about the method to take home if it is available.

Tell them when to come back for a follow-

up visit and to come back sooner if they wish, or if side-effects or warning signs occur.

R-Appoint a return visit for follow-up

At the follow-up visit:

Ask the participant if she is, or they are, still using the method, and whether there have been any problems.

Ask if there have been any side-effects.

Reassure the participant/s concerning minor side-

effects. Explain that the side effects are not dangerous and suggest what can be done to relieve them.

Refer for treatment in the case of severe side-

effects. Ask the participant if they have any questions.

If the participants want to use a different method, tell them about other methods and help in this choice. It is important to remember that changing methods is not bad. The main thing is that they can choose a method which is acceptable and appropriate. If the participants now want to have a child, help them to discontinue the use of their current method of family planning. Make sure the participants know when and where to go for prenatal care when the spouse becomes pregnant.

7. Very important points to note while counselling the participant

Respecting the rights of the participant is essential to the quality and continuity of family p

lanning services, including counselling. Below, are the principles of the participant's rights in all aspects of family planning services.

Every participant has the right to:

1. **Information** - to learn about their reproductive health, contraception and abortion options.
2. **Access** - to obtain services regardless of religion, ethnicity, age, and marital or economic status.
3. **Choice** - to decide freely whether to use contraception and, if so, which method.
4. **Safety** - to have a safe abortion and to practice safe, effective contraception.
5. **Privacy** - to have a private environment during counselling and services.
6. **Confidentiality** - to be assured that any personal information will remain confidential.
7. **Dignity** - to be treated with courtesy, consideration and attentiveness.
8. **Comfort** - to feel comfortable when receiving services.
9. **Continuity** - to receive follow-up care and contraceptive services and supplies for as long as needed.
10. **Opinion** - to express views on the services offered.

B. Mobile Phone-based FP Counselling Guide (Based on Kobo Toolbox)

Greetings! Thank you for choosing to participate in this survey. I will be teaching you about family planning methods that you can use within the first 3 months after delivery.

A. Administrative part

1. Self introduction

Do a self introduction. Name and your role in the study.

The study assistant administering the tool to indicate his/her role in the study i.e. whether a Study Nurse, Study Clerk or Study CHV

Study Nurse ☐

Study CHV ☐

2. Arm

Nurses ☐

CHS ☐

Control ☐

3. Arm

1 Nurses ☐

2 CHS ☐

3 Control ☐

4. Facility

1. Kuoyo HC ☐

2. Kowino HC ☐

3. Kotunga D ☐

4. Simba Opepo D ☐

5. Orongo ☐

5. Group session

Is this a group session?

Indicate "YES" if the counselling session is group counselling and "NO" if not

Yes ☐

No ☐

If Yes (How many of group members are enrolled in the research? _____)

6. Client ANC Number _____

7. Subject ID Enter the subject ID (Enrolment number). _____

B. Counselling purpose and counsellor readiness check:

1. Clarified purpose for the counselling

The main objective of this family planning counselling is to help you understand the role of postpartum family planning and help you decide voluntarily on the contraception method you wish to have during postpartum period to avert adverse inter-pregnancy spacing. You can be helped to choose a contraceptive method that is personally and medically appropriate based on the eligibility criteria for postpartum period. You will be taken through the benefits and side effects of each method and how each of them is used correctly, to ensure informed decisions, safe and effective contraceptive use after birth. Counselling will be done face-to-face in a private space.

Yes ☐

No ☐

2. Counsellor Readiness

i. Is the counsellor ready?

You have good scientific knowledge of all the contraceptive methods and understand the practical part of family planning methods. You can give an overview of the family planning methods and answer ALL questions comfortably and without embarrassment in relation to contraceptive myths, rumours, sexuality, infertility, sexually transmitted infections (STIs), HIV/AIDS, reproductive and personal concerns

Yes ☐

No ☐

ii. Is there assurance of good clinical practice?

Family planning counselling is not a type of lecture, Show utmost respect to the participant, Be honest straightforward, Assure confidentiality, Be empathetic at all time, Provide accurate information, Avoid direct and judgmental questions, Use simple terminologies understood by the participants, Use the provided visual aids to explain the different contraceptive methods, Repeat the most important instructions, Always test participants' understanding before leaving the room, Offer available alternatives.

Yes ☐

No ☐

iii. Are you ready to apply G.A.T.H.E.R. in this counselling session

G- Greet the participant respectfully. A-Ask them about their family planning needs. T- Tell them about different contraceptive options and methods. H- Help them to make decisions about choices of methods. E- Explain and demonstrate how to use the methods. R -Return/refer; schedule and carry out a return visit and follow up.

Yes ☐

No ☐

iv. Are you ready to use B.R.A.I.D.E.D approach in method specific counselling

B-Benefits of the method, R-

Risks of the method, including consequences of method failure, A-

Alternatives to the method (including abstinence and no method) I -

Inquiries about the method, D-

Decision to withdraw from using the method, without penalty, E-

Explanation of the method chosen, D-

Documentation of the session for your own records.

Yes ☐

No ☐

C. Actual counselling: General Information

1. Carefully define family planning

The practice of controlling the number of children one has and the intervals between their births, particularly by means of contraception or voluntary sterilization

Yes ☐

No ☐

2. Discuss family size

Family size is an individual choice of partners. However, spacing of children has many benefits to the mother, child and family.

Yes ☐

No ☐

**3. Respectfully explain benefits/
the need to start family planning/ delay childbirth**

Help protect against risks and complications of pregnancy or unwanted pregnancy like unsafe abortions, perinatal HIV transmission, maternal and infant morbidity and mortality. May help protect against cancer of the lining of the uterus, ovary, cervix or cyst of the ovary. Reduce and regulate the risk of ectopic pregnancy, acne, menstrual flow disorders and cramps. Helps one to control when to get pregnant. Helps one have longer birth intervals and their related health benefits to the mother and infant. Helps one plan for the desired family size. Other

Yes ☐

No ☐

I. Contraceptives detail

1. Discuss effectiveness, eligibility, when to start and how to use Combine Oral Contraceptives (COCs)

Combine hormonal contraceptives Prevent release of the egg. Daily Pill (21-24 dosing days with 4-

7 dose free) 92%, Not recommended if breastfeeding and is less than 6 months postpartum, if not breast feeding can start 21 days postpartum, if having menses can start 5 days from first day of menses, or if certain she's not pregnant)

Yes ☐

No ☐

2. Discuss effectiveness, eligibility, when to start and how to use Progestogen only pills (POPs)

Progestogen only pills Thicken cervical mucus preventing sperm entry, Daily Pill, 90% , Can start anytime if less than 21 days postpartum or more than 21 days PP and hasn't resumed menses and certain that she's not pregnant, if having menses can start 5days from first day of menses, or if certain she's not pregnant

Yes ☐

No ☐

3. Discuss effectiveness, eligibility, when to start and how to use Progestogen only injectables (DEPO/ NET-EN)

Progestogen only injectables Thicken cervical mucus preventing sperm entry, 2-3months Injection, 97%, Can start any time between 6 weeks and 6 months postpartum as long as has not resumed menses, if having menses can start 7 days from first day of menses, or if certain she's not pregnant.

Yes ☐

No ☐

4. Discuss effectiveness, eligibility, when to start and how to use Implants (Norplant, Jadelle)

Implants Thicken cervical mucus preventing sperm entry, 3-5 years of action, 99%, Can start any time if less than 21 days postpartum, or if more than 21 days postpartum and has not resumed menses, if having menses can start 7 days from first day of menses, or if certain she's not pregnant.

Yes ☐

No ☐

5. Discuss effectiveness, eligibility, when to start and how to Levonorgestrel IUD (e.g. LNG IUS, Multiload)

Levonorgestrel IUD Thicken cervical mucus preventing sperm entry, T shaped uterine device, 99% can be inserted 48 hours postpartum then if 4 or more weeks postpartum and amenorrheic, if menses have resumed then insert within 7 days from start of menses or when certain she's not pregnant.

Yes ☐

No ☐

6. Discuss effectiveness, eligibility, when to start and how to use Copper intrauterine device (Copper T)

Copper intrauterine device Damages sperm and prevents, can be inserted 48 hours postpartum then if 4 or more weeks postpartum and amenorrheic, if menses have resumed then insert within 12 days from start of menses or when certain she's not pregnant

Yes ☐

No ☐

7. Discuss effectiveness, eligibility, when to start and how to use Barrier methods

Barrier methods,

(Male condom 98% with correct consistent use, 85% as commonly used, female condoms 90% with correct consistent use, 79% as commonly used, diaphragm (with spermicide) 94% with correct consistent use, 88% as commonly used, Spermicide alone 82% with correct consistent use, 72% as commonly used.

Yes ☐

No ☐

8. Discuss effectiveness, eligibility, when to start and how to use Lactational Amenorrhea Method (LAM)

Lactational amenorrhea method Temporary contraception for new mothers who have not resumed menses. Requires exclusive or full breastfeeding day and night of infant less than 6 months old. Prevents ovulation, 98%. Mandatory criteria; Amenorrhea, full or near full breast feeding and less than 6 months postpartum.

Yes ☐

No ☐

9. Discuss effectiveness, eligibility, when to start and how to use Female sterilization

Female sterilization Block or cut fallopian tubes, >99%, voluntary and informed choice for the surgical procedure

Yes ☐

No ☐

10. Discuss effectiveness, eligibility, when to start and how to use Male sterilization

Male sterilization Keeps sperm from semen, 99%, 3 months delay in taking effect

Yes ☐

No ☐

II. Side Effects

1. Potential side effects of Hormonal Methods: Pills, Implants and Injections

May cause; Nausea, loss of appetite, weight gain, mood changes, dizziness, headaches, irregular menses, spotting, acne. Rarely cause but need to report; high blood pressure, blurred vision, numbness, severe headache, depression, severe abdominal or calf muscle or chest pains, shortness of breath. Provera and Implanon may cause irregular bleeding, breast tenderness and weight gain.

Yes ☐

No ☐

2. Potential side effects of IUDs

Heavy/longer/Irregular monthly periods, cramps, device expulsion or displacement (in a few women), discharge (in first few months), rarely Pelvic Inflammatory Disease (PID) may occur if the client has Chlamydia or Gonorrhoea at time of insertion.

Yes ☐

No ☐

3. Potential side effects of barrier methods: Condom, Diaphragm, vaginal sponges

May cause irritation or allergic reactions (latex sensitivity, UTI and some may break

Yes ☐

No ☐

4. General note made

1. Bleeding changes are normal and not harmful, eat balanced diet. If you find them bothersome, consult the healthcare provider 2. Irregular bleeding is common in first few months and NOT common if taking pills regularly for 21 days with a 7-day period week. 3. Some antibiotics can make some contraceptives less effective; consult your care provider in case you are on some or are to be started on some during you

use of contraceptives 4. Digestive problems are unusual but possible with hormonal therapy

Yes ☐

No ☐

D. Counselling closure

1. Check understanding

Yes ☐

No ☐

2. Allow questions

Yes ☐

No ☐

3. Repeats key information

Yes ☐

No ☐

E. Appointment setting for PPFP

1. Explain information on the appointment sticker

Yes ☐

No ☐

2. Ask the client if they would like to set postnatal appointment date for family planning follow-up or uptake

Indicate on the appointment card when the client agrees to come or go to referral facility for start of Postpartum FP. NOTE: This should be within first 3 months from EDD.

Yes ☐

No ☐

3. Confirm LMP

Check the MCH booklet for LMP or ask the client. (yyyy-mm-dd) _____

4. Write the Postnatal Appointment (PNA) date as

Indicate as the date that the consenting client has agreed to come for PPFP follow-up or uptake. Write the date on the appointment sticker on MCH page 32 (yyyy-mm-dd) _____

5. Have you written PNA on the appointment card

Yes ☐

No ☐

6. Take a photo of appointment card with date (Click here to upload file < 10MB)

7. Ask the client to tell you the preferred postnatal FP method

Combine hormonal contraceptives ☐

Progestogen only pills ☐

Progestogen only injectables ☐

Implants ☐

Levonorgestrel IUD ☐

Copper intrauterine device ☐

Barrier methods, ☐

Lactational amenorrhea method ☐

Female sterilization ☐

Male sterilization ☐

No commitment



Thank you for sparing your time to participate

Appendix 6: Client Exit Interview

Client Exit Interview <i>(Administered During Last Antenatal Counselling Session)</i>												
Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake In Kisumu County												
1	Subject Initials _____		Subject ID _____		Date _____							
2	Averagely How long did sessions take for FP Counselling _____ hours and _____ Minutes)											
3	The first counselling session was done when you were how many weeks pregnant _____ Weeks											
4	How long did you have to wait to be counselled _____ hours and _____ Minutes)											
5	How long did you take in the hospital from the time you entered up to now: _____ hours and _____ Minutes)							Yes	No	DK		
								[1]	[0]	[999]		
6	Were you at any point counselled on FP in a group session							1	0	999		
7	Did the nurse counselling you on FP refer to a teaching aid on the desk (a drawing or real FP commodities)							1	0	999		
8	Did the nurse ask you to repeat what he/she said during all the sessions							1	0	999		
9	<i>Key to be used for question 9a to 9n for the counselling process</i>		Key for 1-7 <i>[1]=Strongly Disagree [2]=Disagree [3]=Mildly Disagree [4]=Neither Disagree nor Agree [5]=Mildly Agree [6]=Agree [7]=Strongly Agree</i>									
Were you:												
a	Greeted					[1]	[2]	[3]	[4]	[5]	[6]	[7]
b	Asked whether you needed FP or not					[1]	[2]	[3]	[4]	[5]	[6]	[7]
c	Taught different PPFP methods.					[1]	[2]	[3]	[4]	[5]	[6]	[7]
d	Helped to make decisions about PPFP methods.					[1]	[2]	[3]	[4]	[5]	[6]	[7]
e	Explained to/ demonstrated to how PPFP methods are used.					[1]	[2]	[3]	[4]	[5]	[6]	[7]
f	Given Return date as per your ANC schedule					[1]	[2]	[3]	[4]	[5]	[6]	[7]
g	Referred for methods not available in the facility					[1]	[2]	[3]	[4]	[5]	[6]	[7]
h	Told about Benefits of PPFP					[1]	[2]	[3]	[4]	[5]	[6]	[7]
i	Told about Risks of PPFP					[1]	[2]	[3]	[4]	[5]	[6]	[7]
j	Told about Alternatives of PPFP available					[1]	[2]	[3]	[4]	[5]	[6]	[7]
k	Given time to make Inquiries/ ask question about the methods					[1]	[2]	[3]	[4]	[5]	[6]	[7]

l	Told that Deciding to withdraw using a method has no penalty	[1]	[2]	[3]	[4]	[5]	[6]	[7]
m	Explained to about the method chosen	[1]	[2]	[3]	[4]	[5]	[6]	[7]
n	Staff Wrote about session in the MCH booklet for your own records.	[1]	[2]	[3]	[4]	[5]	[6]	[7]
10	Key to be used for question 10a to 9n for the counselling process Key for 1-7 [1]=Very Dissatisfied [2]=Dissatisfied [3]=Mildly Dissatisfied [4]=Neither Dissatisfied nor Satisfied [5]=Mildly Satisfied [6]=Satisfied [7]=Very Satisfied							
	How Satisfied were you with							
a	The information given on FP methods	[1]	[2]	[3]	[4]	[5]	[6]	[7]
b	The Choices of PPFP available	[1]	[2]	[3]	[4]	[5]	[6]	[7]
c	Response to your questions and concerns	[1]	[2]	[3]	[4]	[5]	[6]	[7]
d	Privacy	[1]	[2]	[3]	[4]	[5]	[6]	[7]
e	Respect to your opinion	[1]	[2]	[3]	[4]	[5]	[6]	[7]
f	Repetition of important points	[1]	[2]	[3]	[4]	[5]	[6]	[7]
11	Key to be used for question 9a to 9n for the counselling process Key for 1-7 [1]=Strongly Disagree [2]=Disagree [3]=Mildly Disagree [4]=Neither Disagree nor Agree [5]=Mildly Agree [6]=Agree [7]=Strongly Agree							
	<i>The following questions will test your knowledge and understanding of what PPFP is as per what you were taught by the study nurse.</i>							
a	Family planning has some side effects	[1]	[2]	[3]	[4]	[5]	[6]	[7]
b	Family planning has benefits	[1]	[2]	[3]	[4]	[5]	[6]	[7]
c	My choice of family planning has more benefits in preventing unplanned pregnancy than the side effects	[1]	[2]	[3]	[4]	[5]	[6]	[7]
d	I can change my choice of PPFP at anytime	[1]	[2]	[3]	[4]	[5]	[6]	[7]
e	Long Acting Methods means they have more side effects	[1]	[2]	[3]	[4]	[5]	[6]	[7]
f	There are many safer choices of PPFP methods	[1]	[2]	[3]	[4]	[5]	[6]	[7]
THANK YOU FOR YOUR TIME								

Appendix 7: Information Sheet And Consent Form

Information Sheet

The following information is to enable you to give voluntary, informed consent to participate in this study. Please read the information carefully before signing the consent form (part B). To be verbally read for those who are not able to read.

Study title: Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake in Kisumu County.

Investigators Names: Morris Senghor Shisanya

Address Ministry of Medical Services
Masinde Muliro University of Science and Technology,
Po Box 7299 - 40100
Kisumu.
Tel: 0720 640 142

Aim and Significance of the study

This study aims at examining the *effectiveness of targeted antenatal family planning information provision on immediate postpartum family planning uptake in Kisumu County*. This therefore will be a tool for FP policy makers and program planners to develop evidence for best approaches of postpartum family planning to enhance appropriate fertility choices in the first year post delivery.

What participation will involve

Participation in the research is dependent upon signing the informed consent form. Upon signing the consent form, you will be asked detailed questions on social, economic and demographic information and concerning your fertility intentions and later contraceptive choice. This information will be recorded onto forms that will be confidential and for the study's main aim. The participant in this study will be required to give honest information to their level best. The participant will be engaged in the study for one (1) and a half (1/2) years. This period includes the intervention and follow up period.

During the study, participant will be given at one session of postpartum contraceptive targeted counselling during the second and or the third trimester of pregnancy.

There shall be no invasive procedures beyond the routine antenatal profile.

Assignment to whatever community, facility, rural and urban arm of the study shall be random. The participant shall not be required to know which arm they are allocated as experimental blinding procedure. Targeted antenatal comprehensive postpartum Family Planning information shall be given as per the WHO eligibility criteria 2015 for postpartum contraceptives. This will be the treatment for the research. This treatment or procedure does not involve risks to the subject (or embryo, or fetus, or nursing infant).

There is no foreseeable risk for participating in the study and as a participant, you will be entitled to a transport refund of 150 Ksh for the visits after enrolment in the study.

There will no other available alternative procedure apart from the routine antenatal procedures.

Participation may be withdrawn if: the participant refuses to start the counselling sessions; becomes mentally incapacitated; cannot be accessed for follow up for at least 3 months after delivery; preliminary results lead to unwillingness to continue and there is re-consenting and the participant refuses to consent to additional procedures.

The study anticipates 246 clients completing the procedure for the study to the end and group briefing will form the termination process as the researcher proceeds to analyse the data.

The information generated will not be used for profiteering purpose but to build on information on best practices of postpartum family planning.

Data Security

All information you provide will remain confidential. Only the study team will have access to this information. The information will be treated with confidentiality unless your express permission is obtained and any publication of the findings will not expressly mention participant's name or bio-identifiers if any.

You may withdraw from participating in this study at any time without giving reasons. This will not affect services you are receiving.

The monitor(s), the auditor(s), the Ethics Committee, and the regulatory authority(ies) will be granted direct access to the subject's original medical records for verification of clinical trial procedures and/or data, without violating the confidentiality of the subject, to the extent permitted by the applicable laws and regulations. Signing a written informed consent form, the subject or the subject's legally acceptable representative is authorizing such access.

Consent Form

Please read the previous information sheet (or have the information read to you) carefully before completing and signing this consent form. Should you have any questions about the study please don't hesitate to ask the principal investigator prior to and after signing your consent

Consent Form for the Study

Effectiveness of targeted antenatal family planning information provision on immediate postpartum family planning uptake in Kisumu county.

Investigators Names: Morris Senghor Shisanya

Address Ministry of Medical Services
Masinde Muliro University of Science and Technology,
Po Box 7299 - 40100
Kisumu.
Tel: 0720 640 142

FOR COMPLETION BY PARTICIPANTS

I have read

(or the study assistant has read to me) the following sheet concerning this study and I understand what will be required of me if I take part in the study.

I understand that at any time I may withdraw from the study without giving a reason and this will not affect the care am receiving.

I AGREE TO TAKE PART IN THE STUDY:

Initials of the subject:.....

Signed..... (Or thumb print)

Date:.....

Subject Number

Appendix 8: Case Report Form (CRF)

Case Report Form					
Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake in Kisumu County					
Subject Initials _____		Subject ID _____		Date _____	
Eligibility Criteria					
Clients who meet all of the following criteria are eligible for enrolment as study participants					
Inclusion Criteria				Yes	No
1. In second pregnancy trimester				1	2
2. Attending ANC				1	2
3. Has intention of attending PNC at the health centre				1	2
4. An informed consent is obtained;				1	2
Exclusion Criteria					
Clients who meet any of these criteria are not eligible for enrolment as study participants:					
Exclusion criteria				Yes	No
1. Those that meet selection criteria but are participants in another study				1	2
2. Latex sensitivity				1	2
3. Not anticipating a male partner in the next 12 months;				1	2
4. Resides more than 20 Kms from the study site;				1	2
5. Unable to complete consent form as determined by the study nurse or CHA				1	2
6. The only male partner has had a vasectomy				1	2
Informed Consent/ Authorization					
Date Signed :		_____	Refusal Date :	_____	
1. Consent Form, and related study documents, was thoroughly reviewed with the subject. 2. Subject had sufficient time to review the documents and ask questions. 3. Informed consent/ Authorization obtained prior to any study related procedures. 4. A copy of the signed documents have been given to the subject				Yes	No
				1	2
				1	2
				1	2
Date of Birth		_____			
Contacts					
Contact 1.			Residence:		
Contact 2 _____					
Contact 3 _____					
Emergency Contact: _____					
Visit Number [Indicate] [1] [2] [3] [4] [5] [6] [7] [8]					
Vital Signs					
Height _____			Cms		
Weight _____			Kgs		
Temperature _____			Degrees Celsius		

Pulse	bpm				
Respiration	bpm				
Blood pressure	mmHg				
History					
Pre-Existing Disease	Onset	Medication		Compliant to Treatment	
1				1	2
2				1	2
3				1	2
4				1	2
5				1	2
6				1	2
Birth History					
Number of Children	Sex	Date of Birth	Mode of Birth	Alive	Not Alive
[0]					
[1]					
[2]					
[3]					
[4]					
[5]					
[6]					
[>6]					
LMP					
EDD					
GBD					
Physical Examination					
System	Finding* (check one)	Comment	Clinically Significant (YES) (NO)		
Head to toe	Normal [] Abnormal [] Not Examined []				
Abdominal	Normal [] Abnormal [] Not Examined []				
Fundal Height	Normal [] Abnormal [] Not Examined []				

Lie	Normal [] Abnormal [] Not Examined []			
Position	Normal [] Abnormal [] Not Examined []			
Fetal Heart rate	Normal [] Abnormal [] Not Examined []			
Engagement	Normal [] Abnormal [] Not Examined []			
Telephone Contact				
Attempt	Telephone By:	Date	Time	Outcome
Attempt 1				
Attempt 2				
Attempt 3				
Attempt 4				
QUESTION(S) TO BE ASKED				
Since your last study contact, have you had any changes in health status, medical conditions, or adverse events?				
Concomitant Medications Log completed (<i>if applicable</i>)?				
Adverse Event Symptoms reviewed with Subject?				
Adverse Event Tracking Log Completed (same log form for all visits)?				
If any AE has 'Yes' in Serious column, complete SAE form and enter the information in Subject Console.				
Does the medical history form need to be updated?				
Were there any activities that deviated from the defined protocol?				
If yes, completed the Deviation/Violation form				
Subject payment confirmed (<i>if applicable</i>)				

Appendix 9: Appointment Card

COUNTY GOVERNMENT OF KISUMU DEPARTMENT OF HEALTH FAMILY PLANNING APPOINTMENT CARD			
NAME OF CLIENT:			
ANC NUMBER:			
DATE OF APPOINTMENT			
First: [][]/[][]/[][][]	Fourth [][]/[][]/[][][]	Seventh [][]/[][]/[][][]	
Second [][]/[][]/[][][]	Fifth [][]/[][]/[][][]	Eighth [][]/[][]/[][][]	
Third [][]/[][]/[][][]	Sixth [][]/[][]/[][][]	Ninth [][]/[][]/[][][]	
COMMITMENT OF STARTING FAMILY PLANNING			
YES: [][]/[][]/[][][]	Client Sign:	Staff Sign:	
Starts on [][]/[][]/[][][]	Client Sign:	Staff Sign:	
NO: [][]/[][]/[][][]	Client Sign:	Staff Sign:	
<u>METHOD INTENDING TO USE</u>			
<u>COMMENTS:</u>			
Known Health Benefit of Family Planning Methods Help protect against risks and complications of pregnancy or unwanted pregnancy like unsafe abortions, perinatal HIV transmission, maternal and infant morbidity and mortality May help protect against cancer of the lining of the uterus, ovary, cervix or cyst of the ovary Reduce and regulate the risk of ectopic pregnancy, acne, menstrual flow disorders and cramps Helps one to control when to get pregnant Helps one have longer birth intervals and their related health benefits to the mother and infant Helps one plan for the desired family size Others			
Known Side Effects of Family Planning Methods (Serious complications are uncommon) Condom, Diaphragm and vaginal sponges : May cause irritation or allergic reactions (latex sensitivity, UTI and some may break IUDs: Heavy/longer/Irregular monthly periods, cramps, device expulsion or displacement (<i>in a few women</i>), discharge (<i>in first few months</i>), rarely Pelvic Inflammatory Disease (PID) may occur if the client has Chlamydia or Gonorrhoea at time of insertion.			

Hormonal Methods: Pills, Implants and Injections: May cause; Nausea, loss of appetite, weight gain, mood changes, dizziness, headaches, irregular menses, spotting, acne. Rarely cause but need to report; high blood pressure, blurred vision, numbness, severe headache, depression, severe abdominal or calf muscle or chest pains, shortness of breath. Provera and implanon may cause irregular bleeding, breast tenderness and weight gain.

Important points to note:

1. Bleeding changes are normal and not harmful, eat balanced diet. If you find them bothersome, consult the healthcare provider
2. Irregular bleeding is common in first few months and NOT common if taking pills regularly for 21 days with a 7 day period week.
3. Some antibiotics can make some contraceptives less effective; consult your care provider in case you are on some or are to be started on some during you use of contraceptives
4. Digestive problems are unusual but possible with hormonal therapy

Appendix 10: Site Appraisal Form

Protocol Title: Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake in Kisumu County							
IRB Number:							
Principal Investigator:							
Study Site:							
Date of Visit	Monitor Name (printed)	Monitor Signature	Clinical Research Coordinator Name (Printed)	Clinical Research Coordinator Signature	Type of Visit	Yes [1]	Notes
						No [2]	
					Site Initiation Visit		
					Interim Monitoring Visit		
					Close-out Visit		
					Directed Review		
					Routine Review		
Enumerator Evaluation on recruitment and counselling day							
Date	Enumerator names	Number of ANC clients	Number of HCW	HCW for ANC	Number of other clients	HCW for Other services	Flip chart in ANC room

Appendix 11: Training Timetable

Activity	I-Decide Project Team Training		
Venue:	Zoom		
Date:	22.01.2022		
Activity	Sub-Activities	Time	Responsible Person
Introduction	Prayer	2 Min	Volunteer
	Select a rapporteur	1 Min	M. Senghor
	Learner expectation	5 Min	M. Senghor
	Pretest	20 Min	M. Senghor
	Study title	10 Min	M. Senghor
	Statement of the problem		
	Justification of the research		
	Materials and methods		
Study Tools	Study tools	30 Min	M. Senghor
	Download KoBoCollect App		
	Configure team members KoBo Apps by QR code		
	Get Blank forms		
	Consenting		
	Fill blank forms for each of the tools		
FP Counselling	Purpose for Antenatal FP counselling	30 Min	M. Senghor
	Good clinical practice for FP counselling		
	Application of GATHER and BRAIDED		
	Importance of early PPFP		
	FP method effectiveness and eligibility criteria		
Conclusion	Recap of lesson	5 Min	M. Senghor
	Post test	15 Min	M. Senghor
	Closure	5 Min	M. Senghor

Appendix 12: Lesson Plan

LESSON PLAN

Broad objective: Teach research team members on Project materials and methods of I-

Decide research

Specific Objectives:

1. Learners can outline relevant expectations
2. The learner will be able to summarize the research methodology in their own words
3. The learner will be able to list the tools used in the study
4. The learner will be able to list the study routines
5. The learner will be able to install the KoBoCollect Application on their phone
6. The learner will be able to navigate and use the KoBoCollect forms seamlessly
7. The learner will demonstrate understanding of eligibility criteria for early PPFP and improve in their pretest scores in the post test

Audience: I-decide research team members

Venue: Zoom platform

Date: 22nd Jan 2022

Time	Topic	Subtopic	TEACHERS ACTION	LEARNERS ACTION	TEACHING AIDS
5 Min	Introduction	Learner expectation	Question & answer.	Questioning.	Zoom Whiteboard
20 Min		Pretest	Post the Pretest on zoom chat as a link	Submit their pretest answers through google forms	Zoom chatroom
10 Min		Study title Statement of the problem Justification of the research Materials and methods	Lecturing	Listening Questioning	Power point slides, Zoom
30 Min	Study Tools	-Study tools -Download KoBocollect App -Configure team members KoBo Apps by QR code -Get Blank forms -Consenting -Fill blank forms for each of the tools	Demonstration	Reverse demonstration	-Power-point presentation, Zoom, KoBo App

Time	Topic	Subtopic	TEACHERS ACTION	LEARNERS ACTION	TEACHING AIDS
30 Min	FP Counselling	- Purpose for Antenatal FP counselling - Good clinical practice for FP counselling - Application of GATHER and BRAIDED - Importance of early PPF - Individual FP method effectiveness and eligibility criteria	-Lecture -Brainstorming session. -Question & answer interlude.	-Listening -Questioning -Recap	-Power-point presentation. - Zoom platform
5 Min	Conclusion	-Recap of lesson	-Initiate a brain storming session. -Plenary session.	-Participating in teacher initiated sessions. -Questioning	-Power-point presentation. - Zoom platform
15 Min		-Post test	Post the Post-test on zoom chat as a link	Submit their post-test answers through google forms	Zoon chatroom
5 MINS		Closure	Role Clarification Adjournment	- Listening	-Prepared checklist

Appendix 13: Pretest/Post-Test

1. Benefits of meeting the need for postpartum FP include which of the following (Indicate whether True or False)
 - a. **Reduction in maternal mortality.**
 - b. Reduction in paternal mortality.
 - c. **Reduction in infant mortality.**
 - d. Reduction in divorce rate.
2. The current study, “I-decide study”, is geared towards improving postnatal fertility decisions and early FP uptake. The interventions to aid this purpose are. Select as many as apply
 - a. Postnatal counselling to improve postnatal uptake of FP
 - b. **Antenatal counselling to improve postnatal uptake of FP**
 - c. **Setting postnatal appointment for FP follow-up**
 - d. Preconception counselling for FP uptake
3. Which of the following statements about Kisumu County (study county) is true: Kisumu county has:
 - a. **The shortest median postpartum abstinence,**
 - b. A mean number of children less than the national average
 - c. **One of the shortest inter-birth intervals nationally,**
 - d. High postpartum care provision
4. Ways to improve facilities for integrated health and family planning services should include:
 - a. Private areas for counselling women.
 - b. Adequate supplies of contraceptive methods.
 - c. Storage facilities for contraceptive methods.
 - d. **All of the above.**
5. Antenatal period offers a great opportunity to integrate FP information to improve postpartum uptake of FP **True** False
6. The study will include Pregnant women in 1st and 2nd trimester attending ANC **True** **False**
7. Indicate whether each of the following statements is True or False:
 - a. Case report form for Recruitment **True** or False
 - b. Data collection will be in KoBo Collect format using smartphone **True** or False
 - c. Counselling tool filled by Nurse or CHP **True** or False
 - d. Client exit interview guide filled study clerk **True** or False
 - e. Appointment sticker for the client **True** or False
 - f. Questionnaire at 14 weeks postpartum filled by study clerk **True** or False
 - g. The Control arm will use the counselling guide True or **False**
8. The following statements relate to contraception after pregnancy. Please indicate whether each statement is True or False.
 - a. All hormonal contraceptives have a negative effect on milk production True or **False**
 - b. All nonhormonal contraceptive methods can be initiated immediately after child birth. **True** or False
 - c. Lactational amenorrhea method (LAM) provides more than 98 percent protection from pregnancy. **True** or False

- d. There is no difference in the technique for inserting an IUD immediately after delivery and inserting it six months later. True or **False**
 - e. Children are more likely to survive if born two or more years after the preceding birth. **True** or False
 - f. Non-breastfeeding women postpartum should wait three months before beginning contraception. True or **False**
 - g. All contraceptive methods can be started immediately after uncomplicated first- or second-trimester abortions. True or **False**
 - h. IUDs should not be inserted after abortion in cases where infection is suspected. **True** or False
 - i. IUDs should never be inserted earlier than four weeks postpartum. True or **False**
 - j. Sterilization is safe to perform immediately after abortion, even if the woman is hemorrhaging. True or **False**
 - k. Post-abortion counselling increases contraceptive use. **True** or False
9. Providers of family planning services should focus on which of the following?
- a. Communication skills.
 - b. How to help women make voluntary informed choices.
 - c. How to be reasonably sure a woman is not pregnant.
 - d. Characteristics of contraceptive methods and initiation time postpartum and post-abortion.
 - e. **All of the above.**
10. During FP counselling a provider should discuss which of the following?
- a. Short- and long-term reproductive goals.
 - b. Safety, effectiveness, mechanisms of action and side effects for appropriate methods.
 - c. Detailed information on the client's chosen method.
 - d. **All of the above.**
11. Please indicate whether each statement is True or False.
- a. During childbirth is a good time to talk to a woman about sterilization. True or **False**
 - b. Prenatal visits provide good opportunities for talking with women about family planning. **True** or False
 - c. Health care providers should take advantage of pre- and post-abortion counselling to offer family planning services. **True** or False
 - d. A woman should be encouraged to discontinue breastfeeding three months after giving birth to enable her to use a hormonal contraceptive method. True or **False**
 - e. Healthcare providers should encourage women to fully breastfeed. **True** or False
 - f. HIV-positive women may infect their children during breastfeeding. **True** or False
12. LAM is considered to be a very effective method of contraception for up to:
- a. three months postpartum.
 - b. **six months postpartum.**
 - c. nine months postpartum.

- d. 12 months postpartum.
- 13. When can IUD insertion be performed? Check all that apply.
 - a. **within the first 48 hours postpartum.**
 - b. within the first 72 hours postpartum.
 - c. within the first week after delivery.
 - d. **six weeks after delivery.**
 - e. at any time
- 14. Which two of the following are the most appropriate times to perform BTL (female sterilization) postpartum?
 - a. **Within 48 hours after delivery.**
 - b. Two weeks after delivery.
 - c. **Six weeks after delivery.**
- 15. Male sterilization is considered effective:
 - a. immediately after procedure.
 - b. four weeks after procedure.
 - c. six weeks after procedure.
 - d. **12 weeks after procedure.**
- 16. Contraceptive methods that can be initiated by breastfeeding women immediately after delivery include which of the following? Check all that apply.
 - a. **Condoms.**
 - b. Diaphragms.
 - c. Periodic abstinence.
 - d. DMPA.
 - e. **IUDs.**
 - f. Combined oral contraceptives.
 - g. **Female sterilization.**
- 17. Contraceptive methods that should not be initiated by non-breastfeeding women immediately after delivery include which of the following? Check all that apply.
 - a. Condoms.
 - b. **Diaphragms.**
 - c. **Periodic abstinence.**
 - d. DMPA.
 - e. IUDs.
 - f. **Combined oral contraceptives.**
 - g. Female sterilization.
- 18. Fertility will most likely return earliest for:
 - a. Non-breastfeeding women postpartum.
 - b. Breastfeeding women postpartum.
 - c. **Women post-abortion.**
- 19. IUD expulsion rates at six months postpartum are lower when performed by an experienced provider trained in immediate postpartum insertion technique. **True** False

Appendix 14: Questionnaire

Introduction-				
I1	Tool ID_____ I6. Sub-County _____			
I2	Data Collection Date: _____ I7. Facility Name _____			
I3	Partner-supported facility [Y][N] I8. Facility Level [1] [2] [3] [4] [5] [6]			
I4	Interviewer Initials __ __ __ I9. Facility type Gov.[1] FB[2] PRI[2]			
I5	Location of Facility Urban [1] Rural [0]			
SD	Socio-demographic data			
SD1	What is your age in years (State) _____			
	What is your marital status	Yes [1]	No [0]	DK [999]
SD2	Married	1	0	999
SD3	Separated	1	0	999
SD4	Single (Never married)	1	0	999
SD5	Widow	1	0	999
	What level of education did you attain	Yes [1]	No [0]	DK [999]
SD8	None	1	0	999
SD9	Primary	1	0	999
SD10	Secondary	1	0	999
SD11	Tertiary	1	0	999
SD12	What ethnicity are you? State _____			
	What is your employment status	Yes [1]	No [0]	DK [999]
SD13	None	1	0	999
SD14	Housewife	1	0	999
SD15	Employed	1	0	999
SD16	Self-employed	1	0	999
	What is your income bracket per month	Yes [1]	No [0]	DK [999]
SD17	Less than 5000	1	0	999
SD18	5000-10000	1	0	999
SD19	More than 10000	1	0	999
	What is you religion	Yes [1]	No [0]	DK [999]
SD 20	None	1	0	999
SD 21	Christian	1	0	999
SD 22	Muslim	1	0	999
SD 23	Other state	1	0	999
OH	Obstetric History			
OH1	Was this the first pregnancy	1	0	999

OH2	If not how many previous pregnancy			
OH3	How many live births from previous pregnancy			
OH4	Have you ever had a complicated birth before	1	0	999
	What complication	Yes [1]	No [0]	DK [999]
OH5	High blood pressure	1	0	999
OH6	Diabetes	1	0	999
OH7	Prolonged labour	1	0	999
OH8	Cord problems	1	0	999
OH9	Placenta problems	1	0	999
OH10	Preterm rupture of membranes	1	0	999
OH11	Infection	1	0	999
OH12	Obstructed labour (difficult labour)	1	0	999
OH13	Other (state)	1	0	999
MH	Maternal Health Service	Yes [1]	No [0]	DK [999]
MH1	Had you heard of PFP prior to starting ANC	1	0	999
MH2	If yes who/what was your MAIN source of information	1	0	999
MH3	Health Worker	1	0	999
MH4	Health extension	1	0	999
MH5	Mass media	1	0	999
MH6	Relatives and friends	1	0	999
MH7	Did you attend ANC	1	0	999
MH8	if yes in Which facility?			
MH9	What was sex of your main ANC provider	Male[1]	Female[0]	
MH10	How many times did you attend ANC			
MH11	Place of Delivery			
MH12	On scale of 1-5 [Where 1=Very Dissatisfied, 2=Dissatisfied, 3=Neither Dissatisfied Nor Satisfied, 4=Satisfied, 5=Very Satisfied] how satisfied were you with Antenatal services	[1]	[2]	[3] [4] [5]
MH13	Person assisted during labour and deliver	Yes [1]	No [0]	DK [999]
MH14	Nurse	1	0	999
MH15	Clinical officer	1	0	999
MH16	Doctor	1	0	999
MH17	Consultant	1	0	999
MH18	CHP	1	0	999
MH19	What was sex of your main labour and delivery provider	Male [1]	Female[0]	
MH20	Did you undergo any counselling at ANC	1	0	999
MH21	Any area you can remember (state)			

MH22	Did you undergo any counselling at PNC	1	0	999
MH23	Any area you can remember (state)			
PF	Postpartum Family Planning Aspects	Yes [1]	No [0]	DK [999]
PF1	Was your last pregnancy planned?	1	0	999
PF2	If No to PF1 Please briefly state what happened			
PF3	Does your partner plan to have a child in the future?	1	0	999
PF4	a. Yes, he would like to have another child/children	1	0	999
PF5	b. No more/none	1	0	999
PF6	c. Undecided/unsure	1	0	999
PF7	Are you breast feeding your baby? 1.Yes	1	0	999
PF8	a) If No, why?.....			
PF10	In the last 3 months have you had sex? (by sex, we mean, vaginal)	1	0	999
H	For H1-H4 a, b, c Choose appropriate comment about rating for your health Very Bad [1] Bad [2] Neither Bad nor Good [3] Good [4] Very Good [5]			
H1	a. How would you rate your health before pregnancy?	[1]	[2]	[3] [4] [5]
H2	b. How would you rate your health during pregnancy?	[1]	[2]	[3] [4] [5]
H3	c. How would you rate your health after pregnancy?	[1]	[2]	[3] [4] [5]
H4	d. How would you rate your health now?	[1]	[2]	[3] [4] [5]
H5	Have you had any other serious condition or illness in the last 3 months (specify)	1	0	999
H6	(specify)			
H7	Were you admitted in hospital/ clinic/ or see a doctor for this condition	1	0	999
PV	Intimate Partner Violence			
	<i>People in relationships often disagree and sometimes these fights become physical. I am going to ask some questions about this. I want you to speak freely and remember that everything you say will be confidential.</i>	Yes [1]	No [0]	DK [999]
PV1	Has any of your sexual partners ever done any of the following ? Read all options before pausing. Pushed, pulled, slapped, or held you down? Punched you? Kicked you or dragged you? Tried to strangle or burn you? Threatened or attacked you with a	1	0	999

	gun/knife/other weapon?			
PV2	Have you ever physically hurt or threatened a sexual partner, including: Read all options before pausing. Pushed, pulled, slapped, or held him down? Punched him? Kicked or dragged him? Tried to strangle or burn him? Threatened or attacked him with a gun/knife/other weapon?	1	0	999
PV3	Has anyone ever physically forced you to have sex with him when you did not want to?	1	0	999
PV4	Have you ever physically forced anyone to have sex with you when he did not want to?	1	0	999
FP	FAMILY PLANNING /CONTRACEPTION Now I'd like to ask you some questions about contraception.	Yes [1]	No [0]	DK [999]
FP1	Have you or your sexual partner initiated/started on any family planning method in the last 3 months?	1	0	999
FP2	Has any of your sexual partners undergone sterilization? In other words, he had an operation (vasectomy) to avoid having any(more) if YES What year?	1	0	999
FP3	To the best of your knowledge, have you or any of your partner /s used anything else to prevent pregnancy in the past 3 months [This may include using hormonal contraceptive methods, condoms, or behavioural methods].	1	0	999
	In the past 3 months; did you;	Yes [1]	No [0]	DK [999]
FP4	Take a pill every day to avoid becoming pregnant? (These are known as "the pill" or "oral contraceptives").	1	0	999
FP5	Get an injection from the clinic every few months to avoid pregnancy? These are known as "injectables".	1	0	999
FP6	Ever taken pills after sex to avoid pregnancy? (This is also known as "the morning after pill" or "emergency contraception").	1	0	999
FP7	Have a loop or coil inside you that was placed there by a doctor or nurse to keep from becoming pregnant? (This is known as an "IUD")? When?..... <i>Please check to confirm dates</i>	1	0	999
FP8	Have anything placed inside your skin like arm, leg, etc. by a doctor or nurse to keep from becoming pregnant? (This is we mean contraceptive "IMPLANTS")? When?..... <i>Please check to confirm dates</i>	1	0	999
FP9	Any of your partners ever use condoms, a rubber sheath placed on the penis before sexual intercourse,	1	0	999
FP10	if yes for FP9: a. Prevent pregnancy	1	0	999

FP11	b. Prevent HIV transmission?	1	0	999
FP12	Ever pulled out before climax/ejaculation to prevent pregnancy? This is known as "withdrawal".	1	0	999
FP13	and this partner ever avoid sexual intercourse on days of the month when you are most likely to get pregnant? This is also known as the "rhythm method" or "safe period".	1	0	999
FP14	Did you or your partners use any other method to prevent pregnancy?	1	0	999
FP15	Please specify.....	1	0	999
FP16	Which of the following methods of family planning have you <u>HEARD about in the last 6 months?</u> [READ OUT RESPONSES]	Yes [1]	No [0]	DK [999]
a	Condoms	1	0	999
b	Oral Pills	1	0	999
c	Foaming Tablets	1	0	999
d	Injection	1	0	999
e	Intrauterine Device	1	0	999
f	Implants	1	0	999
g	Rhythm Method/Moon beads	1	0	999
h	Lactation Amenorrhea	1	0	999
i	Withdrawal	1	0	999
j	Vasectomy	1	0	999
k	Tubal Ligation or Hysterectomy	1	0	999
l	Traditional Medicines/Herb	1	0	999
FP17	Rate on a scale of [0-5- <i>Where 0 is not heard by that means and 5 is the most frequent mean</i>] the sources of your information about the methods you know most about			
a	Friend	[1]	[2]	[3] [4] [5]
b	Health worker	[1]	[2]	[3] [4] [5]
c	Radio/ TV	[1]	[2]	[3] [4] [5]
d	Spouse	[1]	[2]	[3] [4] [5]
e	Internet	[1]	[2]	[3] [4] [5]
f	Pamphlet/Flier/Printed	[1]	[2]	[3] [4] [5]
g	Other (specify).....			
FP18	Which of the following methods of family planning have you <u>USED in the last 3 months?</u> [READ OUT RESPONSES] Indicate all possible answers	Yes [1]	No [0]	DK [999]
a	Condoms <i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
b	Oral Pills <i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
c	Foaming Tablets <i>No of Weeks Postpartum</i>	1	0	999

		<i>Initiated [____]</i>			
d	Injection	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
e	Intrauterine Device	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
f	Implants	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
g	Rhythm Method/Moon beads	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
h	Lactation Amenorrhea	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
i	Withdrawal	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
j	Vasectomy	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
k	Tubal Ligation or Hysterectomy	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
l	Traditional Medicines/Herb	<i>No of Weeks Postpartum Initiated [____]</i>	1	0	999
FP19	Have you changed contraception that you were using in the last 3 months?		1	0	999
FP20	Reasons for changing/switching contraception.		1	0	999
a	Infrequent sex or no sex		1	0	999
b	Side-effects		1	0	999
c	Lack of knowledge about methods		1	0	999
d	Lack of knowledge about source—where to get them		1	0	999
e	Health concerns		1	0	999
f	Cost		1	0	999
g	Contraceptive will interact with my other drugs		1	0	999
h	My husband/partner is opposed to use		1	0	999
i	Religious reasons		1	0	999
j	Others (specify)		1	0	999
FP21	Which of the following methods of family planning are you <u>CURRENTLY USING?</u> [READ OUT RESPONSES] Indicate all possible answers		Yes [1]	No [0]	DK [999]
a	Condoms		1	0	999
b	Oral Pills		1	0	999
c	Foaming Tablets		1	0	999
d	Injection		1	0	999
e	Intrauterine Device		1	0	999
f	Implants		1	0	999
g	Rhythm Method/Moon beads		1	0	999
h	Lactation Amenorrhea		1	0	999

i	Withdrawal	1	0	999
j	Vasectomy	1	0	999
k	Tubal Ligation or Hysterectomy	1	0	999
l	Traditional Medicines/Herb	1	0	999
FP22	41. How long do you plan to be on this current method?			
FP23	43. Rate [on a scale of 0-5- Where 0 is not heard by that means and 5 is the most frequent means] the sources of your information about the methods you are USING			
a	Friend	[1]	[2]	[3] [4] [5]
b	Health worker	[1]	[2]	[3] [4] [5]
c	Radio/ TV	[1]	[2]	[3] [4] [5]
d	Spouse	[1]	[2]	[3] [4] [5]
e	Internet	[1]	[2]	[3] [4] [5]
f	Pamphlet/Flier/Printed	[1]	[2]	[3] [4] [5]
g	Other (specify).....			
FP24	30. Rate your experience with current Family Planning. Key Very Bad [1] Bad [2] Neither Bad nor Good [3] Good [4] Very Good [5]	[1]	[2]	[3] [4] [5]
FP25	Have you stopped using family planning? <i>No</i> of Weeks Postpartum stopped[____]	1	0	999
FP26	Reasons for stopping contraception.			
a	Wants to become pregnant	1	0	999
b	I discovered I was pregnant	1	0	999
c	Death of baby/child	1	0	999
d	Infrequent sex or no sex	1	0	999
e	Menopause or sterilization	1	0	999
f	Infertility	1	0	999
g	Side-effects	1	0	999
h	Lack of knowledge about methods	1	0	999
i	Lack of knowledge about source—where to get them	1	0	999
j	Cost	1	0	999
k	Contraceptive will interact with my other drugs	1	0	999
l	My husband/partner is opposed to use	1	0	999
m	Religious reasons	1	0	999
n	Travel	1	0	999
o	Forgot (specify f	1	0	999
p	Others (specify)	1	0	999
q	Health concerns	1	0	999
i	- Causes cancer	1	0	999
ii	- Causes infertility	1	0	999
iii	- Makes one grow fat	1	0	999

iv	- Makes one loose appetite	1	0	999
v	- Spoils my skin	1	0	999
vi	- Other (List them)	1	0	999
FP28	Have you skipped using family planning? <i>of Weeks Postpartum stopped[____]</i>	No 1	0	999
	Reasons for skipping contraception.			
a	Wants to become pregnant	1	0	999
b	I discovered I was pregnant	1	0	999
c	Death of baby/child	1	0	999
d	Infrequent sex or no sex	1	0	999
e	My child was admitted	1	0	999
f	I was admitted	1	0	999
g	Side-effects	1	0	999
h	Lack of knowledge about methods	1	0	999
i	Lack of knowledge about source—where to get them	1	0	999
j	Cost	1	0	999
k	Contraceptive will interact with my other drugs	1	0	999
l	My husband/partner is opposed to use	1	0	999
m	Religious reasons	1	0	999
n	Travel	1	0	999
o	Forgot (specify f	1	0	999
p	Others (specify)	1	0	999
q	Health concerns	1	0	999
I	- Causes cancer	1	0	999
Ii	- Causes infertility	1	0	999
Iii	- Makes one grow fat	1	0	999
Iv	- Makes one loose appetite	1	0	999
V	- Spoils my skin	1	0	999
Vi	- Other (List them)	1	0	999
FP29	Have you been admitted in hospital in the last 3 months?	1	0	999
FP30	Has your baby been admitted in hospital in the last 3 months?	1	0	999
FP31	Are you on any herbal medicine? If Yes for What?	1	0	999
FP32	If using condoms, are they for [READ RESPONSES]	Yes [1]	No [0]	DK [999]
a	a. Protection	1	0	999
b	b. Family Planning	1	0	999
c	c. Both	1	0	999
FP33	How long have you used family planning without stopping? MM ____ weeks ____ days (please confirm with records)			
FP34	On a scale of 1-10, how effective do you think the following	Yes	No	DK

	family planning is effective in preventing unwanted pregnancies and indicate whether you would recommend to a loved one by circling either 1 for Yes or 0 for No	[1]	[0]	[999]
a	Intrauterine Device [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
b	Condoms [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
c	Oral Pills [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
d	Foaming Tablets [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
e	Injection [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
f	Implants [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
g	Rhythm Method/beads [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
h	Lactation Amenorrhea [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
i	Withdrawal [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
j	Vasectomy [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
k	Tubal Ligation [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
l	Breast feeding [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
m	Traditional Medicine [1][2][3][4][5][6][7][8][9][10] [Would Recommend it]	1	0	999
	<i>(Please obtain both self-report and circle either 1 for Yes or 0 for No appropriately)</i>	Yes [1]	No [0]	DK [999]
FP35	Did you get your contraceptive at the facility where you were enrolled in the trial?	1	0	999
	If NO specify the reason why you didn't come to facility of enrolment			
a	My spouses preference	1	0	999
b	My own preference	1	0	999
c	Method of choice not available	1	0	999
d	Was referred by my enrolment facility	1	0	999
e	Change of residence	1	0	999
f	Cost	1	0	999
g	Distance	1	0	999
FP36	Which type of facility did you go for your family planning in the last 3 months	1	0	999

a	Government Hospital (specify)	1	0	999
b	Government Health Centre	1	0	999
c	Family Planning Clinic	1	0	999
d	Outreach	1	0	999
e	Government Community-based distributor	1	0	999
f	Private Hospital/Clinic	1	0	999
g	Pharmacy/drug shop	1	0	999
h	Private doctor/nurse/midwife	1	0	999
i	NGO community-based distributor	1	0	999
j	Shops	1	0	999
k	Faith based hospital/clinic	1	0	999
l	Friends/relatives	1	0	999
m	Other	1	0	999
FP37	Was there a cost the last time you obtained this method of family planning?	1	0	999
FP38	If yes what was the cost? _____ KSh.			
FP39	Does your current husband/partner know that you are using family planning?	1	0	999
FP40	Do you feel that you can talk to your husband/partner freely about family planning?	1	0	999
FP41	Do you and your partner talk about family planning	1	0	999
	How often have you and your husband/partner talked about family planning in the past 3 months?			
a	a. Never	1	0	999
b	b. Once or twice	1	0	999
c	c. Three or four times	1	0	999
d	d. Greater than four times	1	0	999
FP42	I'm now going to ask you about what problems family planning methods have caused for you. Have you had any of the following since you have been on contraception,? Rate how worried you became(scale 1-5)	1	0	999
a	Nausea [1] [2] [3] [4] [5]	1	0	999
b	constipation [1] [2] [3] [4] [5]	1	0	999
c	Prolonged menstrual periods [1] [2] [3] [4] [5]	1	0	999
d	Loss of appetite [1] [2] [3] [4] [5]	1	0	999
e	Pain (specify) [1] [2] [3] [4] [5]	1	0	999
f	headaches [1] [2] [3] [4] [5]	1	0	999
g	numbness [1] [2] [3] [4] [5]	1	0	999
h	Rash [1] [2] [3] [4] [5]	1	0	999
i	Changes in your body looks (fat deposits) [1] [2] [3] [4] [5]	1	0	999
j	Muscle aches (specify) [1] [2] [3] [4] [5]	1	0	999

k	Problems having sex, e.g. loss of interest/lack of satisfaction [1] [2] [3] [4] [5]	1	0	999
l	Feel sad, down or depressed [1] [2] [3] [4] [5]	1	0	999
m	Others (specify)[1] [2] [3] [4] [5]	1	0	999
FP43	Have you ever had a discussion about contraceptive use with a health care worker (nurse/doctor/counsellor)?	1	0	999
FP44	The participant has not used any family planning or contraceptives in this postpartum period AND The reasons they did not use it:	1	0	999
a	Wants to become pregnant	1	0	999
b	I discovered I was pregnant before I started contraception	1	0	999
c	Infrequent sex or no sex	1	0	999
d	Menopause or sterilization	1	0	999
e	Infertility	1	0	999
f	Side-effects	1	0	999
g	Lack of knowledge about methods	1	0	999
h	Lack of knowledge about source—where to get them	1	0	999
i	Health concerns	1	0	999
j	Cost	1	0	999
k	Contraceptive will interact with ARV drugs	1	0	999
l	My husband/partner is opposed to use	1	0	999
m	Religious reasons	1	0	999
n	Others (specify)	1	0	999
B	Family Planning Intentions, Attitudes, individual beliefs and behavioural control			
	Key for 1-7 [1]=Strongly Disagree [2]=Disagree [3]=Mildly Disagree [4]=Neither Disagree nor Agree [5]=Mildly Agree [6]=Agree [7]=Strongly Agree			
B1	You expect to use family planning after delivery	[1][2][3][4][5][6][7]		
B2	You want to use family planning after delivery	[1][2][3][4][5][6][7]		
B3	You expect to use family planning after delivery	[1][2][3][4][5][6][7]		
A1a	If I use family planning after delivery, I will feel am doing something positive for my health	[1][2][3][4][5][6][7]		
A2b	Getting pregnant within 2 years after delivery can cause a lot of worry	[1][2][3][4][5][6][7]		
A3c	Family planning soon after delivery prevents pregnancy within 2 years of delivery	[1][2][3][4][5][6][7]		
A4d	Family planning soon after delivery can cause some side effects	[1][2][3][4][5][6][7]		

	Key for 8-11 [-3]=Extremely Undesirable [-2]=Undesirable [-1]=Slightly Undesirable	[0]=Neither Desirable Nor Undesirable [1]=Slightly Desirable [2]=Desirable [3]=Extremely Desirable
A5e	Doing something positive for my health is	[-3][-2][-1][0][1][2] [3]
A6f	Getting pregnant within 2 years after delivery is	[-3][-2][-1][0][1][2] [3]
A7g	Preventing pregnancy within 2 years of delivery is	[-3][-2][-1][0][1][2] [3]
A8h	Tolerating family planning side effects is	[-3][-2][-1][0][1][2] [3]
	Key for 1-7 [1]=Strongly Disagree [2]=Disagree [3]=Mildly Disagree	[4]=Neither Disagree nor Agree [5]=Mildly Agree [6]=Agree [7]=Strongly Agree
SN1	Most people who are important to me think that I should use Family Planning soon after delivery	[1][2][3][4][5][6][7]
SN2	It is expected of me to use Family Planning soon after delivery	[1][2][3][4][5][6][7]
SN3	I feel to be under social pressure to use Family Planning soon after delivery	[1][2][3][4][5][6][7]
BC1	I am confident that I can use Family Planning soon after delivery if I want to	[1][2][3][4][5][6][7]
NC2	It is extremely easy for me to use Family Planning soon after delivery	[1][2][3][4][5][6][7]
BC3	The decision to use Family Planning soon after delivery is beyond my control	[1][2][3][4][5][6][7]
	END: THANK YOU FOR YOUR VALUED TIME	

Appendix 15: Research Staff Training Schedule

RESEARCH STAFF TRAINING					
Protocol Title: Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake in Kisumu County					
IREC Number:				Study Site:	
Principal Investigator:					
Research Staff	Research Staff Sign	Type of Training Completed	Date Training Completed	Trainer Name	Trainer Signature
Study Nurse 1		Documentations [] Data Entry [] Protocol Version [] [] Good Clinical Practice [] PPFP Counselling [] Appointment Card [] Other _____			
Study Assistant 1		Documentations [] Data Entry [] Protocol Version [] [] Good Clinical Practice [] Other _____			
Study Assistant 2		Documentations [] Data Entry [] Protocol Version [] [] Good Clinical Practice [] Other _____			
Study Assistant 3		Documentations [] Data Entry [] Protocol Version [] [] Good Clinical Practice [] Other _____			
Data manager		Documentations [] Data Entry [] Protocol Version [] [] Good Clinical Practice [] Other _____			

Appendix 16: SGS Approval of The Study


MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

Tel: 056-30870
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Website: www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099 19th August, 2021

Morris Senghor Shisanya,
HNR/H/01-52558/2018,
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Shisanya,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Ph.D. Proposal entitled: *“Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake in Kisumu County”* and appointed the following as supervisors:

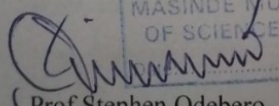
1. Dr. Mary Kipmerewo - SONMAPS, MMUST
2. Prof. Collins Ouma - Maseno University

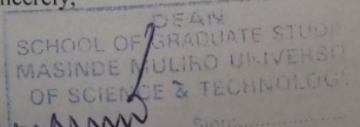
You are required to submit through your supervisor(s) progress reports every three months to the Director of Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Nursing & Midwifery Graduate Studies Committee and Chairman, Department of Nursing Research, Education & Management and Graduate Studies Committee. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of three years from the date of registration to complete your Ph.D. thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,


Prof Stephen Odebero, Ph.D, FIEEP
DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES



Appendix 17: MMUST IERC Approval of The Study



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190,
50100,
Kakamega,
KENYA

Institutional Ethics and Review Committee (IERC)

REF: MMU/COR: 403012 Vol 5 (01)

Date: October 08th, 2021

To: Morris Senghor Shisanya

Dear Sir/Madam,

RE: EFFECTIVENESS OF TARGETED ANTENATAL FAMILY PLANNING INFORMATION PROVISION ON EARLY POSTPARTUM FAMILY PLANNING UPTAKE IN KISUMU COUNTY

This is to inform you that *Masinde Muliro University of Science and Technology Institutional Ethics and Review Committee (MMUST-IERC)* has reviewed and approved your above research proposal. Your application approval number is **MMUST/IERC/013/2021**. The approval period is **08th October, 2021 - 08th October, 2022**.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including informed consents, study instruments, MTA will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by **MMUST-IERC**.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **MMUST-IERC** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to **MMUST-IERC** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to **MMUST-IERC**.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Gordon Nguka'.

Dr. Gordon Nguka (PhD)
Chairman, Institutional Ethics Review Committee

Copy to:

- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

Appendix 18: NACOSTI Research License

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 522628	Date of Issue: 13/September/2021
RESEARCH LICENSE	
	
This is to Certify that Mr. Morris Senghor Shisanya of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Kisumu on the topic: Effectiveness of Targeted Antenatal Family Planning Information Provision on Immediate Postpartum Family Planning Uptake In Kisumu County for the period ending : 13/September/2022.	
License No: NACOSTI/P/21/12862	
Applicant Identification Number	Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION	
Verification QR Code	
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	

Appendix 19: Study Approval By The County

REPUBLIC OF KENYA COUNTY GOVERNMENT OF KISUMU

Telegrams: "PRO (MED)"
Tel: 254-057-2020105
Fax: 254-057-2023176
E-mail: kisumuedh@gmail.com



Director of Public Health, Preventive/
Promotion and Environmental Health
P.O. Box 721 – 40100,
Kisumu.

DEPARTMENT OF HEALTH & SANITATION

Our Ref: GN 133 VOL.IX/(475)

Date: 9th November, 2021

To:

SCMOHs: Kisumu East & Kisumu Central

Med Supt. – Migosi SCH

RE: APPROVAL TO CONDUCT RESEARCH IN KISUMU COUNTY

The department has reviewed and approved this research titled '**Effectiveness of targeted antenatal family planning information provision on early postpartum family planning uptake in Kisumu County**'.

This principal investigator for this research activity is **Morris Senghor Shisanya**.

Kindly accord him all the necessary support

Fredrick Oluoch
County Director Public Health & Sanitation
Kisumu County



CC. Principal investigator: **Morris Senghor Shisanya**.

From the office of Director of Public Health, Preventive/Promotion and Environmental Health

Appendix 20: Trial Registration With PACTR



28 September 2021

To Whom It May Concern:

RE: Targeted Antenatal Information Provision and Postpartum Fertility Decisions

As project manager for the Pan African Clinical Trial Registry (www.pactr.org) database, it is my pleasure to inform you that your application to our registry has been accepted. Your unique identification number for the registry is **PACTR202109586388973**.

Please be advised that you are responsible for updating your trial, or for informing us of changes to your trial.

Additionally, please provide us with copies of your ethical clearance letters as we must have these on file (via email or post or by uploading online) at your earliest convenience if you have not already done so.

Please do not hesitate to contact us at +27 21 938 0835 or email epienaar@mrc.ac.za should you have any questions.

Yours faithfully,

Elizabeth D Pienaar
www.pactr.org Project Manager
+27 021 938 0835



The South African Medical Research Council
Cochrane South Africa | PO Box 19070, Tygerberg, 7505
Tel: +27 (0)21 938 0438 | Email: cochrane@mrc.co.za | Web: www.southafrica.cochrane.org



Appendix 21: Protocol Publication Abstract

PLOS ONE

STUDY PROTOCOL

Effectiveness of targeted antenatal family planning information provision on early postpartum family planning uptake in Kisumu County: Protocol for a simple randomized control trial (I DECIDE Study)

Morris Senghor Shisanya^{1na*}, Collins Ouma^{2a}, Mary Kipmerewo^{3a}

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OPEN ACCESS

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Data Availability Statement: Type of Access: Controlled Access, Type of analysis: Quantitative

Abstract

Overlooking the contraceptive needs of postpartum women constitutes missed opportunities in health system. Inter-birth interval of at least three years can prevent poor maternal, perinatal and neonatal outcomes and afford women socio-economic benefits of family planning (FP). The unmet need for FP in the postpartum period remains unacceptably high and far exceeds the FP unmet need of other women. The Kenya Demographic and Health Survey (KDHS) estimate the unmet need for postpartum FP to be 74%. Maternal and Child Health (MCH) continuum provides a great opportunity for postpartum FP (PPFP) interventions integration especially antenatal targeted FP information giving and gauging of fertility intentions. However, there is no protocol for structured, targeted antenatal FP information giving and behavioural contracting to influence postpartum fertility intentions of mothers before delivery. Knowledge gap regarding fertility intentions and best antenatal strategies for postpartum FP still exists. The available evidence differs across settings and demography. Equally, there has been inadequate exploration of operationally-feasible ways to integrate FP counselling into existing ANC services with limited number of methodologically rigorous trials. The current protocol will therefore examine the effectiveness of targeted antenatal family planning information provision on early postpartum FP uptake using a randomized control trial in Kisumu County, Kenya. The protocol will assess socio-cultural beliefs towards PPFP and perceived individual control of PPFP choice, analyze knowledge and intention for PPFP, and finally compare and examine the determinants of PPFP uptake between study groups. Through simple sampling, a group of 246 antenatal mothers will be randomly assigned to control, community and facility intervention groups as per eligibility criteria in the study facilities. After at least 3 months of intervention and postpartum follow-up,

PLOS ONE

Targeted antenatal contraceptive information provision and postpartum fertility decisions

analysis Process of Requesting for Data: Request to be done by email of the principal investigator. The decision is by the Research team lead by the Principal investigator. Criteria for reviewing the request: Qualification of the person requesting, description of the purpose of the request, willingness to engage the Principal investigator in the development of analysis plan, and monographs or manuscripts.

Funding: The author(s) received no specific funding for this work.

Competing interests: The authors have declared that no competing interests exist.

clinical superiority will be used to gauge which intervention was effective and the model superiority. Questionnaire and Case Report Forms will be the main source of data. The participant will form the unit of analysis which will be by intention to treat. Bivariate analysis will be applied as the selection criteria for inclusion of predictors of intention and uptake in the final logistic regression model. Odds Ratios and 95% confidence interval (CI) will be used to demonstrate significance and the strength of association between selected variables. Dissemination will be through conference presentations and peer reviewed journals. The trial has been registered with the Pan African Clinical Trials Registry PACTR202109586388973 on the 28th September 2021.

