Post-Partum Family Planning Integration With Maternal Health Services & Its Associated Factors: an Opportunity to Increase Postpartum Modern Contraceptive Use in Eastern Amhara Region, Ethiopia, 2020

Delelegn Tsegaye (✉ delelegnt78@gmail.com )
Wollo University

Mesele Tehone
Wollo University

Seid Yesuf
Wollo University

Adugnaw Berhane
Addis Ababa University

Research

Keywords: Postpartum family planning, service integration, reproductive age women, East Amhara region

DOI: https://doi.org/10.21203/rs.3.rs-207643/v1

License: © This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License
Abstract

**Background:** Postpartum family planning (PPFP) is the prevention of unintended and closely spaced pregnancies through the first 12 months following childbirth. Despite evidence of increased FP uptake when FP is integrated with maternal health, newborn health, childhood immunization, and prevention of mother-to-child transmission of HIV services; opportunities for integrated service delivery are often missed.

**Methods & materials:** The study was conducted in four selected hospitals of Amhara region, Ethiopia. Institution based interventional pre/posttest study design was used. A total of 607 study participants (400 from the intervention facilities and 207 of them from the non-intervention facilities) were involved. This study have done in 3 phases. Baseline assessment data was collected from January 15 to February 15/2020. Intervention was done from April to June, 2020 and data collection for post intervention assessment was done from July 1-15, 2020. Data was collected through interviewer administered standardized and pretested questionnaires. The collected data were presented in tables, graph & chart. Association between dependent and independent variables were tested using logistic regression model of SPSS version 20. Variables that had P-value less than 0.25 at bivariate analysis were entered to multivariate analysis model. Finally, those variables which had P-value of less than 0.05 were considered as having statistically significant association with the dependent variable. The intervention packages were refreshment training for health care provider, discussion with involvement of hospital administrators and coordinators to identify the gap & act accordingly, coaching, mentoring, incorporating post-partum family planning activity in annual health care provider evaluation criteria as well as fulfilling stock out family planning methods.

**Result:** About 92(23%) of participants got integrated postpartum family planning service among the intervention hospitals during the baseline assessment but after providing intervention the level of postpartum family planning service integration was 116(29%) which is increased by 6%.This increment was significant because with in short period of time and the current COVID 19 pandemic situation such change was acceptable. The level of post-partum family planning service integration with maternal health services among the non-intervention hospitals was similar in both pre & post intervention phases. The factors associated with postpartum family planning service integration with maternal health service during the baseline assessment were being referral hospitals, current using FP, currently pregnant, got counseling on post-partum family planning, decision making power of mother. While after intervention provision; the factors associated with post-partum family planning integration were all the pre intervention phase factors but being referral hospitals and currently pregnancy were not statistically significant associated factors.

**Conclusion & recommendation:** The level of post-partum family planning service integration were 92(23%) during the baseline assessment while improved by 6% to 116(29%) during the post intervention period. The factors associated with post-partum family planning service integration with maternal health service were being referral hospitals, current pregnancy, current using family planning, client centered
counseling on family planning and decision making power of mother to use family planning. Collaborative effort should be done with Hospital staffs, health administrators and non-governmental organizations to improve the unmet need on post-partum family planning service.

**Introduction**

Postpartum family planning (PPFP) is the provision of family planning for the prevention of unintended and closey spaced pregnancies through the first 12 months following childbirth (1). Thus, before and after delivery mothers should be counseled and encouraged to decide and initiate modern contraceptive method within the specified period.

If a woman had only the number of pregnancies they wanted, at the intervals they wanted, maternal mortality can drop by 30% (2). Family planning (FP) can avert 3.2 million out of 5.6 million under five deaths and 109,000 out of 155,000 (70%) of maternal deaths. However, a demographic health survey data from 57 different countries showed that, right after delivery (62%), after 6 months of amenorrhea (43%) and at the end of amenorrhea (32%) of women in the first year after birth have an unmet need for contraception (3).

If a woman is amenorrhic, fully or nearly fully breast feeding and in the first 6 months of delivery, the risks of getting pregnancy will be reduced by 98%. Therefore, post-partum mothers have a special privilege of using lactational amenorrhea (LAM) as one of the alternatives of family planning methods (1–3). The six month period however, is a hallmark of shifting from exclusive breastfeeding to complementary feeding (1).

LAM users should shift to other modern contraceptives methods. Pregnancies that occur in the first year of the delivery are mostly unplanned and risky for the mothers. It can results in adverse birth outcomes for the babies such us, preterm, low birth weight and small for gestational age (2, 4). If couples spaced their pregnancies at least 2 years apart from the previous birth, the morbidity and mortality risk both for the mothers and their babies can be reduced. In addition, spacing births allows parents to devote more time to each child in the early years (1).

The postpartum period provides a crucial window of opportunity in which to address unmet need for contraceptives for several reasons including the health benefits of an increased inter-pregnancy interval for mother and child, a high desire to delay or avoid subsequent births, and opportunities for interactions between women and health care provider. Contraceptive use during the postpartum period have many health benefits. For example, a data showed from 52 countries demonstrated a positive association between increased birth interval, child survival and reduced risk of under nutrition. Another study showed infants conceived 18–23 months after a live birth have a reduced risk of low birth weight and preterm birth as compared with others. Further, postpartum contraceptive use decreases the risk of subsequent maternal morbidity and mortality (5).

**Implications of this study**
As this study is an original research it have the following implication for different scientific communities and population at large. Post-partum family planning service integration is poor in Ethiopia and other developing countries. This implies that the post-partum family planning service coverage is low and have high unmet need. This study have also assessed the factors associated with low PPFP integration. One of the factors is being referral hospital. No study showed this associated factors. This finding show that there is low attention of this service in the referral Hospitals as compared with District Hospitals. The other implication of this research is that client centered counseling is vital for the service integration. The other implication of this study is if the post-partum family planning service is integrated with other maternal health services, unwanted pregnancy, closely spaced pregnancy, unsafe abortion and other maternal morbidity will reduced which are the major causes of maternal mortality.

Methods And Material

Study area and period

The study was conducted at selected health facilities of east Amhara region. These hospitals were Dessie referral hospital, Debre brehan referral hospital, Woldia General Hospital and Kemissie general hospital. The first two hospitals were used as intervention facility and the other two categorized for non-intervention facility respectively. Dessie referral hospital is one of referral hospital who serves for more than 8 million population of south wollo zone, north wollo zone, some part of north shoa, afar region and Oromia special zone. This hospital give an average of 60 delivery per day. This hospital name changed Dessie comprehensive specialized hospital starting from September, 2020. It provide holistic specialized service. Debrebrehan referral hospital also called Debreberhan comprehensive specialized hospital started from September, 2020. It serves for more than 2 million population. All facilities serve maternal, neonatal and child health service. Kemissie general hospital is found in Amhara region, Oromia special zone. It serves for more than 250,000 population. Family planning service is provided in this hospital. Woldia general hospital is found in north wollo zone, Amhara region. The two General hospitals grow to a rank of referral hospital in September, 2020.

The baseline assessment was conducted from January 15 to Feb. 15/2020, Intervention was done from April to May, 2020 while data collection for post intervention assessment was done from July 1-17, 2020.

Study design: An institution based pre-posttest intervention was employed

Sample size determination

CI-95%, Power 80%, ratio of control to case=2, % control exposed=6%, % case exposed=13%, OR=2.4 taken from study done in Somali region (26)

The total sample size=607(400 in intervention hospitals and 207 in non-intervention hospitals)
Population

Source population

All post-partum mothers who were found in east Amhara region

Study population

Selected postnatal mothers who come for post-partum care services

Inclusion and Exclusion criteria

Inclusion criteria

Clients seeking services at targeted MNCH service like delivery areas (ANC, PMTCT, PNC and immunization) in selected health facilities and women aged 18–49 years who were pregnant or had a child under 1 year of age

Exclusion criteria: Those participants who was seriously ill during the interview

Sampling procedures

A total of 4(four) Hospitals were selected which are found in east Amhara region. The hospitals were selected randomly. It is expected that all hospitals need to provide similar service regarding post-partum family planning service. The sample was taken by proportional allocation to size for each hospital. The study had 3 phases. The first phase was baseline assessment from all Hospitals. The 2nd phase would be providing intervention for interventional facilities and the last phase would be assessing the change (follow up) after 3 month of intervention.

Variables

Dependent variables: level of postpartum family planning service integration

Independent variables:

Sociodemographic variables: religion, distance, place of residence, waiting time in facility, type of health facility, educational status, household income

Obstetric factors: ANC follow up, place of delivery, number of children, previous use of contraceptive

Others factors: decision making capacity of women, client centered counseling
Operational definitions

Modern contraceptive methods were female and male sterilization, IUDs, oral pills, emergency contraceptive pills, injectables, male condom, female condom and spermicide.

Postpartum contraceptive use will be coded ‘1’ for women who reported using any of the above mentioned methods during the postpartum period; those who reported using a traditional method or who did not use any method will be coded ‘0’.

Post-partum family planning service integration: those mothers who come for either of the following services like labor/delivery, PNC, EPI, under 5 children examination, PMTCT, ANC and got postpartum family planning.

Counseling on PPFP: ‘received information on FP from any health provider during ANC in the third trimester’, ‘received information on FP from any health provider after reaching the facility or before leaving the facility after delivery’ and ‘received information on FP from a health provider during the postpartum period’.

Data collection procedures

The research was conducted in selected hospital from January 15 to February 15, 2020 while the post intervention data collection period was from July 1-17, 2020. Structured pre-tested interviewer administered questionnaire were prepared by adapting from different studies considering the local situation of the study area and purpose of the study was employed (8). It was developed in English language to be understood by data collectors. Four (4) supervisors and 16 Bachelor of Science midwives were employed as data collectors and trained for five days regarding data collection, timely collection and Checking of the collected data from the respondents. These all procedures were done for both baseline and post intervention phase of the study.

Data quality management

To make the data valid and reliable; the structured questionnaire were pre-tested in Borumeda hospital (5% of total sample) which was not involved in this study. In addition five days training were provided for data collectors. To get informed consent and reliable data clear explanation of the purpose and procedure of the study were given to the study participants. Finally the filled questionnaire were checked to ensure that all the information were properly collected and recorded.

Data processing, analysis and interpretation
Data clean up and cross-checking were done before analysis. Data were checked, coded and entered to EPI Info version 3.5.3 then it was exported to Statistical Package for Social Sciences (SPSS) version 20 for analysis. Both descriptive and analytical statistical procedures were utilized. Descriptive statistics like percentage mean and standard deviation used for the presentation of demographic data and PPFP service integration. Tables and figures were also be used for data presentation.

Multivariate logistic regression models were fitted to control the possible effect of confounders and finally the variables which have independent association with PPFP service integration were identified on the basis of AOR, with 95%CI and p-value less than 0.05.

**Ethical considerations**

The data collection were carried out after getting permission from Wollo University. Official letter of cooperation was submitted to each hospital.

Informed verbal consent were obtained from each participant prior to starting the data collection process. Each participant were informed about the aim of the study and its contribution for further advancement of health services. Participants who were not willing to participate in the study were not forced to be involved in the project and have full right to refuse or withdraw from participation. They were also informed that all data obtained from them would be kept confidential. Recommendation was given for both intervention and non-intervention hospitals to know the gap and act accordingly. Counseling and intervention were given for participants who did not have FP service in both interventional and non-interventional hospital during data collection period. For non-interventional study hospitals based on the recommendation intervention have done accordingly.

**Results**

**Results on the baseline assessment**

**Part I: sociodemographic & reproductive health characteristics of respondents**

This study was done to assess post-partum family planning integration with maternal health services in eastern Amhara region. In this study a total of 607 post-partum women were involved. From those respondents the intervention group were Dessie referral hospital and Debre brehan referral hospital with a sample size of 201 and 199 post-partum women were involved respectively while Woldia General Hospital and kemissie General hospital were non interventional hospitals with study participants of 100 and 107 respectively were participated.

In the intervention facilities out of 400 participants; the majority of them were in the age group between 15-30 years old which were 285(71.2%) while the rest were above 31 years old 115(28.8%).
In non-interventional facilities a total of 207 study participants were involved. Most of them 149(72%) were in the age group between 15-30 years old.

Regarding the religion, 330(54.3%) of respondents were orthodox Christian and 258(42.5 %) were Muslim (table1).

**Post-partum family planning service utilization with maternal health service**

About 279(70%) of participant in the intervention hospitals did not used any family planning methods (fig 1)

Most of the respondents in the intervention hospitals used injectable 39(9.7%) next to this lactational amenorrhea method accounts the 2nd most used family planning method as a method of choice (Table 2).

Out of 242 post-partum family planning (PPFP) users in both intervention and control health facilities; most of the respondents 153(63.2%) used short term family planning methods. From those short term methods; injectable constitute the highest (fig 2).

From 242 PPFP users; 228(94.2%) used their first method of choice while the rest 14(5.8%) were not used their first method of choice. The main reason for not using their method of choice were due to poor client centered counseling 10(71.4%), and 4 of them want different method

**Post-partum Family planning service integration with maternal health service**

Only very few post partial mothers come to Dessie & Debre brehan hospitals (intervention arm) for family planning service. These was 16(8%) from 81 mothers (fig 3)

Only 92(23%) of mothers in the intervention area got FP whereas 169(42.3%) of mothers did not have any additional service (table 3).

Over all in the intervention hospitals; only 92(23%) of mothers got PPFP service while the majority of them did not get the service (fig 4)

But 152(25%) respondents got PPFP service who comes for different maternal health service in both intervention and control hospital (fig 5).

Regarding discussion with Family planning methods 241(60.3%) mothers did not discuss on PPFP in the intervention health facilities.

The majority of mothers decided to start the family planning methods in the intervention health facilities were implant and injectable (table 4)

**Factors associated with PPFP integration with maternal health services in the baseline study**
To identify the factors associated with post-partum family planning service integration different variables were entered and their p-value less than 0.25 at the bivariate analysis were entered to multivariate level analysis (table 6). The following variable were not associated in our baseline study like reason for visit, age, distance, and number of children but the other five variables were statistically significant with the outcome variable. These factors were intervention hospitals(referral hospitals) were less likely to provide integrated PPFP as compared to control arm(general hospitals) with AOR(95% CI) of 0.42(0.2-0.8).

Those participants who were not pregnant get integrated PPFP service as compared to those mothers who were currently pregnant with AOR (95% CI) of 6.8(1.5-29.5).

 Those mothers who do not currently use family planning method were less likely to get integrated PPFP service as compared to mothers who currently use PPFP with AOR(95% CI) of 0.4(0.2-0.8)

Those Post-partum mothers who decided to seek service with provider suggestion were more likely to get integrated PPFP service as compared to those clients who decide by their own AOR(95% CI) of 3.6(1.8-7).

Those mothers who did not discuss on FP with health care provider were less likely to get integrated PPFP service as compared with mothers who discuss on FP with health care provider AOR(95% CI) of 0.17(0.1-0.3).

Counseled mothers but did not decided to use PPFP were less likely to get integrated maternal health service as compared with those mothers who decided to use PPFP in current counseling AOR(95% CI) of 0.26(0.1-0.5)(table 5).

Even if religion, educational status, distance to reach to health facility were significantly associated with PPFP service integration in other studies but it is not significantly associated in this study.

**Result during the intervention phase**

The intervention were given for three months and the outcome was measured after three month of intervention. The follow up have been done regularly by the research team, Hospital administrators and health care providers.

The intervention package were the following. One of the main intervention package were equip health care provider and mother with knowledge and skills regarding PPFP service integration benefits. For those health care providers who did not get updated training; refreshment training was given, coaching health care provider while they counsel and providing FP procedure were undertaken, baseline research finding dissemination was done during the training and discussion with the top managers and health care providers, fulfilling stock out FP supply were done during the intervention phase, discussion were undertaken on their major bottleneck regarding PPFP service integration and mutual understanding were got, and onsite monitoring by the principal investigators were done during the intervention phase. These intervention were done with collaboration of midwife, medical director, hospital CEO, gynecologist/obstetrics and nurses who were working in MNCH ward.
During data collection period therapeutic counseling were given for all study participant and their partner on the benefit of utilizing PPFP. This intervention were different from other routine activities due to frequent monitoring with the service provider, gave opportunity to identify their challenge, participating their manager in follow up and incorporate it in their annual performance and evaluation criteria.

Discussion were undertaken to counsel those ANC mothers to utilize PPFP after birth. So intervention were given during ANC visit.

**Results during the Post intervention**

Post-partum family planning service integration during post intervention

A total of 607 study participant were involved in the post intervention study. About 400 participant were taken from intervention facility and 207 participants were taken from non-intervention facility which was similar with the baseline study. Post intervention were done after 3 month of intervention period.

**Sociodemographic data during the post intervention**

Out of 607 study participants 431(71.5%) of them were in the age group between 15-30 years old which was similar from the baseline finding. About 51.1% of them were Christian while the rest were Muslim and most of them living with their sexual partner(married) accounts 554(91.3%) while the rest did not living with their sexual partner. Regarding their level of education 251(41.1%) of them attended grade 1 to 8 while few of them attended college and above which was 93(15.3%).

Out of 400 participant from intervention facility; 116(29%) of mothers got integrated post-partum family planning service whereas during the baseline assessment only 92(23%). It was increased by 6% from the baseline result. While in the non-intervention facility the post-partum family planning service integration was 48(23.2%) which was similar with the baseline findings (fig 6).

**Factors associated with PPFP service integration during post intervention period**

Ten variables were entered to multivariate logistic regression analysis. These were educational status of the mother, marital status, distance to hospital, age, currently using a family planning, type of health facility, discussion with health care provider on post-partum family planning, decision to seek PPFP service, current pregnant, and currently using FP by todays counseling. From those variable only 4 of them were statistically significantly associated. These were type of health facility, decision making of the mother to seek PPFP service, counseling on post-partum family planning and currently using post-partum family planning.

The primary reason for their visit to the hospital in the intervention hospitals were most of them 358(89.5%) come for utilizing other post-partum maternal health service and the rest come for taking PPFP. In the non-intervention hospitals 136(65.7%) of them come for taking other maternal health service other than PPFP and 71(34.3%) of them come for the purpose of PPFP service.
Most of the finding regarding to factors associated with post-partum family planning service integration with maternal health services were similar with the baseline study finding except some difference. These are the following

Mothers who previously used postpartum family planning service got integrated maternal newborn and child health service as compared with mothers who were not currently using postpartum family planning service.

Those mothers who did not get counseling on PPFP service were less likely to get integrated PPFP service as compared with their counterpart.

Mothers who did not decided to use PPFP service during counseling were less likely to get integrated PPFP service than those who decided by themselves (table 6).

**Discussion**

In this study the level of post-partum family planning service integration with maternal health service like EPI, PNC, PMTCT, ANC, labor and delivery was 23% during the baseline assessment while 29 % after providing intervention (post intervention phase).

This level of PPFP service integration was very low as compared with study done in Addis Ababa, Ethiopia 80.3% (18), at Debre Tabor town which was 63% (1) and a study conducted at Malawi which was 74.6 % (15). In Jharkhand, 71.1%–73.2% of clients accessing ANC also receiving FP, but PNC- FP integration was also high at 60% (10).

This discrepancy might be due to the difference in the socio-demographic characteristics of the respondents, the time gap of the studies. It could also be due to the difference in study design as well as our study is on PPFP service integration but others study were on utilization of PPFP.

Our finding is similar with study done in Bihar 28.1% - 35.2% of clients receiving ANC services also received FP services. By contrast, only 0 –10.9% of clients receiving PNC and 2.2%–4.1% of clients receiving child health services also received FP services (5).

In our study the level of post-partum family planning integration with maternal health service was higher than studies that were done in Burundi 20% (16), Kenya (5.5%) (10), India (16.3%) (11) and at Kebridehar Town, somali region, Ethiopia 12.3% (17). This may be due to study design.

A study done at Bondo Hospital only 1.8% of clients accessing ANC, about one-third (34.5%) of clients accessing PNC and one-fifth (20.2%) of clients accessing child health also received FP services. Embu sites showed FP integration with ANC was 14.3%–28.6% (19). This finding is similar with our finding low PPFP service integration with ANC, PNC, labor and delivery, under 5 years child clinic, EPI and PMTCT (18-21)
This differences might be due to health care provider negligence, high case load, poor monitoring and evaluation by their respective manager, poor internal facility communication. On the other hand the socio-demographic characteristics of respondents, study design and types of data used (used secondary data in other study) can be the possible reasons.

A study done on integration of family planning with maternal health services in urban Uttar Pradesh, India found that FP information provision as part of antenatal care in the third trimester, delivery and the postpartum period have a positive association with postpartum modern contraceptive use in urban Uttar Pradesh. However, health providers often miss these opportunities. Even if a high proportion of women coming into contact with health providers when up taking maternal health services, only a small proportion of them received FP information during these visit (5). This finding is in line with our study in which many mother come for delivery, PNC, EPI, Under 5 children OPD, PMTCT, ANC services but majority of them did not got PPFP service. So we have great chance to provide counseling on PPFP service in order to prevent unwanted pregnancy and to reduce unmet need in PPFP in Ethiopia which constitute 78%.

Regarding factors associated with post-partum family planning service integration. In our study the following factors are associated with PPFP service integration with maternal health service. These are being referral hospitals, currently using FP, got counseling on PPFP, decision of mother to use FP by the same day of facility visit. Being referral hospital is one of the factors which is associated with post-partum family planning integration. This result is new and not in line with other study as well as it is acceptable finding in our setup because most referral hospitals have high case load, most of them have not adequate space for providing counseling, and most referral hospitals provide service for referral complicated cases. Due to these reason referral hospital provide PPFP service less than expected as compared to other district hospitals. The other possible reasons may be lack of staff commitment, more complicated cases in the referral hospitals may make less attention for routine FP service, poor monitoring and supervision can constitute in our study

The other associated factors are decisions making of the mother to seek the PPFP service and client centered PPFP counseling findings were in line with study done in Tanzania (11).

Clients had greater odds of receiving a modern method when they received information on two or more versus fewer methods, had a FP discussion with their partner versus no discussion, made their own FP decisions versus not made own FP decisions, received FP information from two or more versus fewer sources(11)

In other studies the following factors were associated with postpartum family planning service integration like Age, income, number of live birth, marital status but in our study these factors are not significantly associated with the dependent variable. T reason may be study design, socioeconomic difference, sample size and time of the study done before 5 years ago.

This study have the following implications for health care provider, administrator and NGOs.
Firstly the result showed that post-partum family planning service was not adequately integrated with other maternal newborn and child health services. Even if short term interventions were given, the service integration was not satisfactory. This finding may show everyone who directly or indirectly involved in the maternal, newborn and child health service should be committed to save the life of mother, newborn and children by avoiding unwanted pregnancy during the postnatal period. The post-partum family planning service is not only the responsibility of health care worker who is assigned in family planning clinic. Every service delivery units like ANC, EPI, under five children clinic, PMTCT, ART should collaborate to reduce the unmet need for PPFP service.

Regarding the factors associated with post-partum family planning service integration. Most of the factors are avoidable. It can be managed with less intensive resource. Comprehensive specialized/referral hospitals should give emphasis for family planning service especially in post-partum family planning because in our country Ethiopia the highest unmet need for family planning service was during the post-partum period according to EDHS 2016 and mini DHS 2019 data.

The other implication of this study was client centered counseling should be given for all mothers who want to take family planning service. This counseling should be given during ANC, labor and delivery, EPI and under 5 children clinic, ART and so on. So every health care provider should not forget to provide information and counseling about the importance of family planning.

On the other hand internal and external mentoring and supportive supervision should be done in all health institution hierarchal from referral hospitals up to health center in order to assess the gap and intervene accordingly. So every health facility managers should provide special attention on this service area.

**Strength & limitation of the study**

**Strength of the study**

Using large sample size. The study design (interventional) make the study to identify the gap and provided intervention accordingly. Ongoing monitoring during and after the intervention as well as involvement of senior hospital manager made to get great emphasis on the issue.

**Limitation of the study**

Time shortage for intervention phase. COVID 19 affect our study during intervention and post intervention period including monitoring the progress of their intervention.

**Conclusion**

In this study the level of post-partum family planning service integration was 23% during baseline assessment but after providing intervention the level of post-partum family planning service integration was 29% which was 6% higher than the baseline result. This finding was very low as compared with other studies.
The factors associated with PPFP service integration with maternal health service were Referral hospitals, current using FP, counseling on FP, decision making ability of mother to use FP. These factors are similar in both the baseline and post intervention assessment result except some difference.

**Recommendation**

**To health care providers & administrators**

Post-partum Family planning are not well integrated. So close monitoring, supervision and internal mentoring should be done regularly. The counseling on PPFP is vital for the uptake of this service. So client centered counseling should be given in every service that we get post-partum mothers within 1 year after birth. Need separate space for FP service as well as the room should have adequate space for doing PPFP procedures. Updated refreshment training should be given to those untrained health care worker on PPFP

**To researcher:** better to study on the quality of PPFP counseling

**To Engender health/Marie stopes international Ethiopia/UKAID:** Regular mentoring and supportive supervision should be continue

**Declaration**

**Competing interest**

The authors have no conflicts of interest to declare for this study.

**Funding:** This study was financially sponsored by UKAID, Engender health and Mariestopes Ethiopia. Technically Addis Ababa University assisted this study by assigning advisor

**Ethics approval & consent to participate:** Ethical approval were gained from Wollo University College of medicine & health science. And also verbal consent were taken from all study participant before gathering the data. The reason for taking verbal consent was it is not experimental study as well as it does not harm any study participants.

**Authors’ Contribution**

DT, MT, SY & AB Participated in all phase of the study process including developing & editing the manuscript. All authors approve the final manuscript for publication.

**Consent for publication:** not applicable

Availability of data and material: All data is available for anyone who needs it and want to utilize at any time.
Abbreviation: ANC- antenatal care, ART- antiretroviral treatment, EPI-Expanded programme of immunization, OPD- outpatient department, PNC- postnatal care, PMTCT- prevention of mother to child transmission, PPFP- postpartum family planning

Acknowledgements

We would like to express our heartfelt gratitude for UKAID, Engender health, Marie stopes international and AAU for giving this chance to develop research proposal to identify the gap and intervene accordingly on post-partum family planning service integration. We would also like to extend our heartfelt thanks to our advisor Dr. Adugnaw Berhane for his unreserved guidance and support. We also express our thanks for all data collectors and study participants without them, this study will not be fruitful. Last but not least we will like to thanks to selected hospital staffs for providing us the required data to carry out the research proposal development.

References

1. Eden Bishaw Taye, Dawit Gebeyehu Mekonen and Tibeb Zena Debele. Prevalence of post-partum modern family planning utilization and associated factors among postpartum mothers in Debre Tabor town, North West Ethiopia. BMC Res Notes (2019) 12:430
2. Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. Lancet. 2012; 380(9837):149–56.
3. Rossier C, Bradley SE, Ross J, Winfrey W. Reassessing unmet need for family planning in the postpartum period. Stud Fam Plan. 2015;46(4):355–67.
4. Salahuddin Ahmed¹, Maureen Norton, Emma Williams, Saifuddin Ahmed, Rasheduzzaman Shah, Nazma Begum, Jaime Mungia, Amnesty Lefevre, Ahmed Al-Kabir, Peter J Winch, Catharine McKaig, Abdullah H Baqui. Operations research to add postpartum family planning to maternal and neonatal health to improve birth spacing in Sylhet District, Bangladesh. Glob Health Sci Pract. 2013;1(2):262–76.
5. Pranita Achyut, Anurag Mishra, Livia Montana, Ranajit Sengupta, Lisa M Calhoun, Priya Nanda. Integration of family planning with maternal health services: an opportunity to increase postpartum modern contraceptive use in urban Uttar Pradesh, India. J Fam Plann Reprod Health Care 2016;42: 107–115. doi:10.1136/jfprhc-2015-101271
6. Ministry of health of Ethiopia. Ethiopia demographic & health survey, 2016
7. Ruth Medina, Ricardo Vernon, Irma Mendoza, Claudia Aguilar. Expansion of Postpartum/Postabortion Contraception in Honduras. 2001. http://pdf.usaid.gov/pdf_docs/Pnacm374.pdf [accessed 4 July 2014].
8. Zerai A, Tsui AO. The relationship between prenatal care and subsequent modern contraceptive use in Bolivia, Egypt and Thailand. Afr J Reprod Health. 2001;5:68–82.
9. Almaz Yirga Gebremedhin, Yigzaw Kebede, Abebaw Addis Gelagay and Yohannes Ayanaw Habitu. Family planning use and its associated factors among women in the extended postpartum period in Addis Ababa, Ethiopia. Contraception and Reproductive Medicine (2018) 3:1 DOI 10.1186/s40834-017-0054-5

10. Devon Mackenzie, Anne Pfitzer, Christina Maly, Charles Waka, Gajendra Singh, Abanti Sanyal. Postpartum family planning integration with maternal, newborn and child health services: a cross-sectional analysis of client flow patterns in India and Kenya. BMJ Open 2018; 8:e018580. doi:10.1136/

11. Dynes M.M, E. Bernstein, D. Morof, L. Kelly, A. Ruiz, W. Mongo, P. Chaote, R. N. Bujari and F. Serbanescu. Client and provider factors associated with integration of family planning services among maternal and reproductive health clients in Kigoma Region, Tanzania: a crosssectional study. Reproductive Health (2018) 15:152 https://doi.org/10.1186/s12978-018-0593-5

12. Abdullah H Baqu, Salahuddin Ahmed, Nazma Begum, Rasheda Khanam, Diwakar Mohan, Meagan Harrison, Ahmed al Kabir, Catharine McKaig, Neal Brandes, Maureen Norton, Saifuddin Ahmed. Impact of integrating a postpartum family planning program into a community-based maternal and newborn health program on birth spacing and preterm birth in rural Bangladesh. journal of global health, December 2018, Vol. 8 No. 2, 020406

13. Anne Sebert Kuhlmann, Loretta Gavin and Christine Galavotti. The Integration of Family Planning with Other Health Services: A Literature Review. International Perspectives on Sexual and Reproductive Health. Volume 36,Number 4,December 2010.

14. Anthony Idowu Ajayi , Oladele Vincent Adeniyi and Wilson Akpan. Maternal health care visits as predictors of contraceptive use among childbearing women in a medically underserved state in Nigeria. Journal of Health, Population and Nutrition (2018) 37:19 https://doi.org/10.1186/s41043-018-0150-4

15. Bwazi C, Maluwa A, Chimwaza A, Pindani M. Utilization of postpartum family planning services between six and twelve months of delivery at Ntchisi District Hospital, Malawi. Health. 2014;6(14):1724.

16. Rutaremwa G, Kabagenyi A. Postpartum family planning utilization in Burundi and Rwanda: a comparative analysis of population based crosssectional data. Pan Afr Med J. 2018;30:303

17. Nigussie A, Girma D, Tura G. Postpartum family planning utilization and associated factors among women who gave birth in the past 12 months, Kebrribeyah Town, Somali Region, Eastern Ethiopia. J Women's Health Care. 2016;5:340

18. Annie Mwangi, Charlotte Warren. Strengthening Postnatal Care Services Including Postpartum Family Planning in Kenya. 2008. http://pdf.usaid.gov/pdf_docs/Pnadn570.pdf [accessed 4 July 2014].

19. Diourati Sanogo, Saumya RamaRao, Heidi Jones, Penda N’diaye, Bineta M’bow, Cheikh Bamba Diop. Improving quality of care and use of contraceptives in Senegal. Afr J Reprod Health 2003;7:57–73.
20. Charlotte Warren, Annie Mwangi, Erick Oweya, Rosemary Kamunya, Nancy Koskei. Safeguarding maternal and newborn health: improving the quality of postnatal care in Kenya. Int J Qual Health Care 2010;22:24–30.

21. Caleb-Varkey, Leila, Anurag Mishra, Anjana Das, Emma Ottolenghi, Dale Huntington, Susan E. Adamchak, M.E. Khan, and Rick Homan. "Involving men in maternity care in India," FRONTIERS Final Report. Washington, DC: Population Council. 2004.

Tables

Table 1: sociodemographic & reproductive characteristics of respondents, April, 2020
| Variables               | Intervention hospitals | Non-intervention hospitals |
|------------------------|------------------------|-----------------------------|
|                        | n(%)                   | n(%)                        |
| **Age**                |                        |                             |
| 15-30                  | 315(51.8)              | 149(24.5)                   |
| 31-50                  | 85(14)                 | 58(9.5)                     |
| **Religion**           |                        |                             |
| Orthodox               | 240(60)                | 90(43.4)                    |
| Muslim                 | 156(39)                | 102(49.2)                   |
| Protestant             | 2(0.5)                 | 10(4.8)                     |
| Catholic               | 2(0.5)                 | 5(2.4)                      |
| **Marital status**     |                        |                             |
| married                | 380(95)                | 193(93.2)                   |
| Divorced               | 15(3.7)                | 8(3.8)                      |
| Widowed                | 2(0.5)                 | 1(0.5)                      |
| Single                 | 3(0.8)                 | 5(2.5)                      |
| **Educational status** |                        |                             |
| cannot read & write    | 66(16.5)               | 67(32.4)                    |
| primary(grade 1-8)     | 177(44.2)              | 75(36.3)                    |
| secondary(Grade 9-12)  | 87(21.8)               | 42(20.2)                    |
| college & above        | 70(17.5)               | 23(11.1)                    |
| **Time taken to reach hospital** |                        |                             |
| < 1 hour               | 260(65)                | 167(80.7)                   |
| >1 hour                | 140(35)                | 40(19.3)                    |
| **Ideal number of children** |                    |                             |
| 1-3 children           | 100(25)                | 40(19.3)                    |
| ≥4 children            | 300(75)                | 167(80.6)                   |
| **Number of living children** |                  |                             |
| 1                      | 140(35)                | 64(31)                      |
| 2                      | 114(28.5)              | 48(23.1)                    |
| 3                      | 77(19.2)               | 35(17)                      |
| 4                      | 51(12.8)               | 27(13)                      |
| ≥5                     | 18(4.5)                | 33(16)                      |
| Variables                                      | Interventional hospitals | Non interventional hospitals |
|-----------------------------------------------|--------------------------|------------------------------|
| **Currently used FP**                          |                          |                              |
| injectable                                    | 39(9.7)                  | 69(33.3)                     |
| OCP                                           | 17(4.2)                  | 17(8.2)                      |
| Implants                                      | 23(5.7)                  | 16(7.7)                      |
| IUCD                                          | 6(1.5)                   | 5(4.7)                       |
| LAM                                           | 36(9)                    | 13(6.2)                      |
| Other                                         | 0                        | 2(0.9)                       |
| **Age of youngest child while using FP method**|                          |                              |
| At birth                                      | 20(5)                    | 8(3.8)                       |
| Within a week of birth                       | 5(1.2)                   | 9(4.3)                       |
| 2-4 week                                      | 20(5)                    | 20(9.6)                      |
| 5 week- 3 month                              | 65(16.2)                 | 70(33.8)                     |
| 4-6 month                                    | 11(2.7)                  | 11(5.3)                      |
| > 7 month                                    | 1(0.2)                   | 2(0.9)                       |

**Table 2**: post-partum family planning service utilization in eastern Amhara region, 2020
Table 3: Additional services the participant accessed while the mother were at the Hospital, 2020

| Variables                                           | Intervention hospitals | Non-intervention hospitals |
|-----------------------------------------------------|------------------------|----------------------------|
| Additional services received while the mother was at the Hospital |                        |                            |
| ANC                                                 | n 1                    | 7                          |
| %                                                   | .3%                    | 3.4%                       |
| PMTCT                                               | n 38                   | 17                         |
| %                                                   | 9.5%                   | 8.2%                       |
| Immunization                                        | n 18                   | 9                          |
| %                                                   | 4.5%                   | 4.3%                       |
| Labor/delivery                                      | n 8                    | 1                          |
| %                                                   | 2.0%                   | .5%                        |
| PNC                                                 | n 74                   | 10                         |
| %                                                   | 18.5%                  | 4.8%                       |
| FP                                                  | n 92                   | 60                         |
| %                                                   | 23.0%                  | 29.0%                      |
| No                                                  | n 169                  | 102                        |
| %                                                   | 42.3%                  | 49.3%                      |

Table 4: The family planning methods decided by the participants during the current counseling in east Amhara hospitals, 2020
| variables                                      | Intervention hospitals | Nonintervention hospitals |
|-----------------------------------------------|------------------------|---------------------------|
| Discussion on postpartum family planning      | No                     | 241(60.3%)                | 124(60.2%)                |
|                                               | n(%)                   |                           |                           |
|                                               | yes                    | 159(39.8%)                | 82(39.8%)                 |
|                                               | n(%)                   |                           |                           |
| The family planning method decided to start   | Condom                 | n(%)                      |                           |
|                                               |                         | 1(.3%)                    | 1(0.5%)                   |
|                                               | Implant                | n(%)                      |                           |
|                                               |                         | 117(29.3%)                | 57(27.5%)                 |
|                                               | Injectable             | n(%)                      |                           |
|                                               |                         | 105(26.3%)                | 98(47.3%)                 |
|                                               | IUCD                   | n(%)                      |                           |
|                                               |                         | 27(6.8%)                  | 0                         |

**Table 5:** Factors associated with post-partum family planning service integration in eastern Amhara region selected hospitals during the baseline assessment, 2020
| variables                          | Integrated n(%) | Not integrated n(%) | COR(P-value) | AOR(95%CI)         | P-value |
|----------------------------------|----------------|---------------------|--------------|-------------------|---------|
| Health facility type             |                |                     |              |                   |         |
| Intervention                     | 92(23)         | 308(77)             | 0.73(0.10)   | 0.42(0.2-0.8)     | 0.01*   |
| Non-intervention                 | 60(29)         | 147(71)             | 1            | 1                 |         |
| Currently pregnant               |                |                     |              |                   |         |
| No                               | 149(26.1)      | 422(73.9)           | 3.88(0.02)   | 7(1.5-29.5)       | 0.011*  |
| Yes                              | 3(8.3)         | 33(91.7)            | 1            | 1                 |         |
| Currently using PPFP             |                |                     |              |                   |         |
| No                               | 73(20.1)       | 291(79.9)           | 0.5(0.001)   | 0.4(0.2-0.8)      | 0.006*  |
| Yes                              | 79(32.5)       | 164(67.5)           | 1            | 1                 |         |
| Primary reason of visit          |                |                     |              |                   |         |
| For other maternal health service| 124(23.6)      | 402(76.4)           | 0.58(0.035)  | 1.4(0.6-3)        | 0.4     |
| For FP service                   | 28(34.6)       | 53(65.4)            | 1            | 1                 |         |
| By whom the client decide to seek service |            |                     |              |                   |         |
| Provider                         | 78(51.7)       | 73(48.3)            | 3.2(0.000)   | 3.6(1.8-7)        | 0.000*  |
| Client own                       | 72(39.1)       | 112(60.9)           | 1            | 1                 |         |
| Discussion on PPFP               |                |                     |              |                   |         |
| No                               | 39(10.7)       | 327(89.3)           | 0.13(0.000)  | 0.17(0.1-0.3)     | 0.000*  |
| Yes                              | 113(46.9)      | 128(53.1)           | 1            | 1                 |         |
| Age                              |                |                     |              |                   |         |
| 15-30 years old                  | 117(27)        | 317(73)             | 1.45(0.085)  | 1.4(0.7-3)        | 0.3     |
| 31-49 years old                  | 35(20.2)       | 138(79.8)           | 1            | 1                 |         |
| Time taken to reach to hospitals(car) |              |                     |              |                   |         |
| < 1 hour                         | 120(28.1)      | 307(71.9)           | 1.8(0.008)   | 1.6(0.8-3)        | 0.14    |
| ≥1 hour                          | 32(17.8)       | 148(82.2)           | 1            | 1                 |         |
| Ideal number of children for her | 1-3 | 29(20.7) | 111(79.3) | 0.73(0.17) | 0.6(0.3-1.2) | 0.1 |
|---------------------------------|-----|----------|-----------|------------|-------------|-----|
|                                 | ≥4  | 123(26.3)| 344(73.7) | 1          | 1           |     |

| Decided to use PPFP service     | Not | 18(7.5)  | 222(92.5) | 0.14(0.000) | 0.26(0.1-0.5) | 0.000* |
|---------------------------------|-----|----------|-----------|-------------|--------------|--------|
|                                 | Yes | 134(36.5)| 233(63.5) | 1           | 1            |        |

**Table 6:** Factors associated with post-partum family planning service integration with other maternal newborn and child health services in eastern Amhara region during the post intervention period

| variable                  | PPFP integration | COR            | AOR(95%CI) | P-value |
|---------------------------|------------------|----------------|------------|---------|
| Currently using PPFP     |                  |                |            |         |
| No                        | 112(30.8)        | 252(69.2)      | 0.5(0.001) | 0.5(0.3-0.8) | 0.009** |
| Yes                       | 101(41.6)        | 142(58.4)      | 1          | 1       |
| Counseled on PPFP        |                  |                |            |         |
| No                        | 86(25.8)         | 247(74.2)      | 0.13(0.000) | 0.4(0.2-0.6) | 0.001** |
| Yes                       | 127(46.4)        | 147(53.6)      | 1          | 1       |
| Decided to use PPFP      |                  |                |            |         |
| Not                      | 59(22.8)         | 200(77.2)      | 0.14(0.000) | 0.5(0.3-0.8) | 0.015** |
| Yes                      | 154(44.3)        | 194(55.7)      | 1          | 1       |