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Knowledge, attitudes, and practices surrounding postpartum IUD and implant services among providers in Kigali, Rwanda

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Abstract

Knowledge, attitudes, and practices surrounding postpartum IUD and implant services among providers in Kigali, Rwanda
By: Amedee B. Ngarukiye

Background: Rwanda, which has the highest population density in continental Africa, has achieved remarkable success in reducing its total fertility rate (TFR) within the past decade from 6.1 children per woman in 2005 to 4.2 children per woman in 2014-2015. Contraceptive prevalence rates (CPR) in Rwanda are some of the highest in sub-Saharan Africa and are beneficial in improving maternal health, ultimately reducing infant mortality. While evidence shows that the IUD is one of the most effective contraceptive methods, more than half of women currently using modern contraceptives are using injectables and use of postpartum contraceptive methods use is low. Patient interaction with providers has been shown to be a major factor in increasing family planning method utilization.

Objective: This study seeks to examine the knowledge, attitudes, and practices among healthcare providers in Kigali, Rwanda surrounding the provision of these services during postpartum periods and to elucidate potential barriers and avenues of demand creation for postpartum long-acting reversible contraception (LARC) promotion.

Methods: Fourteen hospital-providers (nurses (n=2) and midwives (n=12)) across two healthcare facilities in Kigali, Rwanda were surveyed individually to assess their knowledge, attitudes, and practices with promoting and providing two postpartum LARC methods, the copper intrauterine device (IUD) and implant. The final questionnaire contained total of 149 questions concerning attitudes, experiences, and practices providing long-term contraceptive options and took an average of 90 minutes to complete. Questionnaires were administered in-person using Android tablets between May and August of 2017 at the two health centers, Kabusunzu and Nyarugunga. All quantitative variables were analyzed using SAS 9.4 while open-ended questions were analyzed in MaxQDA 12 using deductively developed codes.

Results: There was large variation in response to knowledge questions relating to postpartum IUDs. This variation indicated widespread disagreement among providers about procedures and best practices for postpartum IUD insertion. The most common advantages of postpartum IUDs according to providers were that the method is long-term (64.29%), does not contain hormones (57.14%), and has fewer side effects (35.71%), while advantages of postpartum implants included their ability to delay pregnancy/birth spacing (35.71%), reduce appointment frequency (35.71%), and that the method prevents pregnancy and is long-term (28.57%).

Discussion: The large variation in provider responses to knowledge-based questions suggests a need for additional training, a statement that was echoed by providers themselves. Although provider training and enthusiasm alone will not be sufficient to increase uptake of postpartum IUDs, these findings indicate that the lack of trained providers may be a barrier to patient uptake of these methods. Providing early client counseling and up-to-date, evidence-based resources for provider and client education may be ways to increase postpartum LARC provision across facilities.

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To my rock, Iceberg: thank you for your endless support and unparalleled wisdom. And lastly, however, I dedicate this study project to this generation of young African women who have the opportunity to change the future of our marginalized continent and restore our tarnished image. It is my hope that many will continue to seek the answers to these tough questions as we strive to improve the livelihood and health of our world for future generations.

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Chapter 1: Introduction

Background

Rwanda, which has the highest population density in continental Africa, has achieved remarkable success in reducing its total fertility rate (TFR) within the past decade from 6.1 children per woman in 2005 to 4.2 children per woman in 2014-2015 [1]. Contraceptive prevalence rates (CPR) in Rwanda are some of the highest in sub-Saharan Africa, with 48% of married women and 35% of unmarried women using a modern method of family planning (FP). However, key gaps still remain in the use of contraception, including underutilization of long-acting reversible contraception (LARC) among women who wish to delay fertility, especially during postpartum periods. The unmet need for contraception, defined as the percentage of women 15-49 who are at risk of pregnancy and wish to halt or delay fertility but are not currently using a family planning method, stands at roughly 20% for both married and unmarried women [1] and is higher in postpartum women. Moreover, reported ideal family size is on the decline [2], suggesting that demand for family planning may increase in the coming decade.

Postpartum contraceptives are beneficial in improving maternal health, ultimately reducing infant mortality [1], through birth spacing. In particular, increase in postpartum intrauterine device (IUD) use has been shown to reduce infant mortality rates (IMR) [3]. While evidence shows that the IUD is one of the most effective contraceptive methods, more than half of women currently using modern contraceptives are using injectables, with less than 20% using LARC methods, of which less than 10% use IUDs [1]. However, in sub-Saharan Africa, a growing number of women and sexually active young adults are using a form of family FP method, and many are choosing contraceptive implants [4]. While implants account for just 7% of all

contraceptive methods used in the region, interest in implants has risen over the past decade [2, 4]. Duval et al (2014) suggest that between 2004-05 and 2010-11, use of implants rose 16-fold in Rwanda. Similar trends were seen in other countries in the region including: Ethiopia, Tanzania and Malawi [5]. Moreover, almost half of married women in Rwanda want no more children and another 37% wish to delay fertility at least 2 years [1]. Thus, promotion of postpartum LARC presents an opportunity to provide women with contraceptive option that align with their fertility goals and desired family size.

Patient interaction with providers has been shown to be a major factor in increasing family planning method utilization [5]; increase awareness of the benefits of implants and IUDs among sub-Saharan women; and a growing interest in LARC overall [6]. Wider availability of cost-competitive implants and cost-effective IUDs by the donor community and development organizations also helps explain the dramatic increase in women's desire to limit family size and the growing acceptability of modern methods [4]. It is therefore crucial to identify potential barriers to effective family planning counseling. Although some research has examined knowledge, attitudes, and perceptions about LARC among postpartum women and couples, little is currently known about factors which may influence LARC service provision among providers. Capacity-building interventions among healthcare providers suggest that more training for nurses may increase both provider confidence in promoting LARC methods and client uptake [6]. A major challenge in contraceptive uptake in sub-Saharan Africa is the lack of trained providers in hospitals to provide counsel on LARC methods, especially interval and postpartum IUDs [7].

This study seeks to examine knowledge, attitudes, and practices surrounding postpartum LARC counseling and service provision among healthcare providers in Kigali, Rwanda. Through the analysis of qualitative and quantitative data, we aim to describe potential provider-side barriers to postpartum LARC adoption to inform future opportunities to increase uptake of LARC among postpartum women who wish to delay fertility.

Chapter 2: Review of Existing Literature

I. Current trends in fertility and contraceptive use in Rwanda

According to the 2014-2015 Demographic and Health Survey (DHS), Rwanda's total fertility rate (TFR) for 2014 is 4.2 children per woman. This reflects a significant decline in the past decade from the 2005 figure of 6.1 and is most pronounced among women under 30 [2]. This decline in fertility is due to government efforts to promote family planning, train health workers, and make contraception more accessible to women, as well as demographic shifts such as higher female education [1]. Contraceptive prevalence rates (CPR) in Rwanda are some of the highest in sub-Saharan Africa, with 48% of married women and 35% of unmarried women using a modern method of family planning. The most commonly used contraceptive methods are injectables (accounting for more than half of contraceptive use among all women), pills, and implants [1]. Implants are slightly more common among unmarried women, while pills are more common among married women [2]. Currently, only 2% of modern contraceptive users are using IUDs (married and unmarried), with 14% of married and 18% of unmarried contraceptive users using implants [1].

However, the unmet need for family planning, defined as the proportion of women who wish to delay fertility but are not currently using contraception, is about 20% among both married and unmarried, sexually active women [1, 2]. The ideal desired family size in 2013 was 3.3 children per woman, down from 4.9 in 2000. This is reflected in the Vision 2020 goals, which aim to reduce the TFR to 3.4 by 2020 [2]. The most recent RDHS data indicates that only 10% of couples wish to have a child within two years, while 39% wish to delay fertility for at least two years; another 47% did not wish to have more children [1].

Moreover, close birth spacing remains a common problem in Rwanda, with 20% of women with at least one child becoming pregnant 9-14 months postpartum [8]. Fully half of children in Rwanda are conceived before the recommended 24 months postpartum, according to the 2010 DHS, with median pregnancy timing at 23.7 months after the previous birth [1]. These trends suggest that there may be a growing need for family planning in the coming years, particularly for long-acting methods.

II. Promotion of fertility-goal based family planning

Rwanda has the highest population density on the African continent [2]. The Office of Population was first established in 1982 to coordinate the promotion of family planning. However, these efforts were stalled due to the 1994 genocide and its aftermath, which reduced the country's population by more than 20%. Population control efforts fell out of favor [2].

However, by 2000, rapid growth had restored the population to 8 million, almost one million more than the pre-1994 figure [2]. In 2003, the government began to implement a new population control campaign centered around restoration of the health system and promotion of family planning. Part of the National Reproductive Health Priority policy is a commitment to provision of all methods of family planning, including oral contraceptives, condoms, LARC, injectables, and female sterilization [2].

A. Health systems strengthening

Following the 1994 genocide and its aftermath, the Rwandan government sought to rebuild its health system and expand access to healthcare. A main feature of the new health system was the establishment of "mutuelles", or insurance plans which are characterized by cost-sharing between government and citizens. This initiative is considered largely responsible for increasing both access to and utilization of healthcare, including family planning [2].

1. Performance-based financing

Performance-based financing (PBF), also known as payment for performance (P4P), in which providers and/or facilities receive bonuses for meeting quantitative and qualitative targets in service provision, was piloted in Rwanda beginning in 2001 [9]. Since 1994, the healthcare system had operated under the central government, was largely financed by foreign aid, and offered services free of charge. Prompted by a dearth of funding and excess demand, the

healthcare system was decentralized, and facilities were permitted to determine a fee schedule for services. As a result, utilization dropped dramatically [9].

Performance-based financing was introduced as a solution to rising costs and diminishing access. Thus far, PBF initiatives have proven successful in improving quality of service, motivation of healthcare workers, and utilization by clients. A pilot program in Cyangugu province led to a 62% drop in out-of-pocket expenditures [9]. This and other projects provided enough evidence for the government to take on output costs from 2004 onwards. Subsequent studies [10, 11] have confirmed that utilization has increased since the introduction of PBF. More recent studies [11, 12] have shown improvements in the quality of service provision rather than quantity. For example, initiation of PBF resulted in a greater number of family planning counseling sessions being correctly documented, but not in an increase in the number of new planning clients.

B. Health communication

A growing body of literature supports the critical role of health communication in the promotion of family planning. A 2016 study modelling factors which influenced the increase in family planning use in Rwanda demonstrated that the bulk of this effect was due to family planning promotion initiatives, including radio messaging and personal contact with healthcare providers, rather than demographic shifts such as increased female literacy [5]. Other quantitative analyses [2] also show that positive attitudes among married women are associated with having heard radio messages about contraception, after controlling for sociodemographic factors. Studies from other African nations [5] confirm that both contraceptive attitudes and contraceptive behaviors

can be influenced by mass media campaigns. These campaigns are part of a larger, comprehensive effort to incorporate family planning into classroom instruction and youth clubs.

C. Impact of family planning promotion efforts

A 2007 Guttmacher Institute report [13] using data from 1995-2005 cites Rwanda as having the highest unmet need for contraception among married women in the sub-Saharan Africa region at 38% of women ages 15-49. Since then, unmet need among married women has been almost halved, largely due to information campaigns and improved access to healthcare facilities and services [14]. Unmet need among unmarried women has also decreased, although less precipitously [13]. In 2005, the TFR was 6.2 children per woman. By 2014-2015, this number had dropped to 4.2 children per woman, a 31% decrease [1].

D. Challenges and areas for future interventions

According to 2005 DHS data, common reasons cited for unmet need among married women who were not currently using contraception but wished to delay fertility included postpartum amenorrhea (41%), morally opposed (19%), and side effects or inconvenience (18%) [13]. A lack of exposure was cited by over 50% of women, while supply of methods and services was cited by 28%. Among unmarried women, lack of exposure was cited by over 70%, while moral objections and supply of methods and services ranked much lower than for married women. Among women who intended to use contraception, but did not currently do so, postpartum

amenorrhea (89%), lack of awareness (88%), high cost (82%), and lack of access to services (84%) were the most commonly cited reasons for not initiating family planning.

Unmet need for family planning is proportionally higher among women in their 30s, women in the lowest income quintile, and women with no formal education [1]. Interventions targeted to these groups may be necessary to close remaining gaps in family planning provision. Even for women using effective, modern methods of contraception, fertility goals often do not align with chosen family planning method. Particularly among married women who wish to delay childbearing for at least two years, choice of contraceptive method may be inconsistent with fertility intentions [15]. Research suggests that there may be an unmet demand for LARC in Rwanda. Among HIV-positive women at two clinics, 53% expressed an intention to adopt postpartum LARC or to be sterilized. After receiving family planning counseling, 22% followed through with implant adoption during the postpartum period [16] and a small minority of women chose IUDs. This may have been due to the fact that implants were offered free of charge, while IUDs were not.

There is some evidence that facility religious affiliation may affect service provision in the area of family planning [15]. Further research must be conducted to determine whether provider religious beliefs impact attitudes toward and provision of family planning services. Moreover, there is a gap between the proportion of women with positive attitudes toward family planning (89%) and the proportion who believe their partner has positive attitudes (64%) [17]. Among women who personally disapproved of family planning or who believed their partner did not approve, as well as those who did not know their partner's attitude, demand for family planning

was lower and unmet need for contraception was higher [17]. This highlights the need for providers to include both partners in discussions of fertility goals and postpartum family planning.

III. Provider knowledge, attitudes, and practices with postpartum LARC

A. What do providers know about postpartum implants and IUDS?

Previous studies suggest that provider knowledge is critical for effective LARC counseling and service provision [6]. An intervention focused on capacity building of 59 government nurses in Kigali, Rwanda was associated with a 4 to 9-fold increase in LARC adoption over 3 years. After providers were trained in the insertion of IUDs and implants, they were more likely to promote these methods with clients, who were in turn more likely to adopt LARC. Less is known about provider knowledge of LARC insertion specific to the postpartum period. This is an important gap to address, as the timing of postpartum IUD insertion may influence the risk of expulsion [18].

B. What are barriers to LARC service provision?

A survey of postpartum couples in Kigali suggests that client misconceptions surrounding IUDs may present a barrier to uptake, especially when coupled with a lack of training on the provider's part [18]. A multi-country study based on observations of family planning counseling sessions found that healthcare providers underutilize evidence-based materials when providing family

planning counseling. Rwandan providers in particular tended to emphasize contraindications of family planning methods over effectiveness or other advantages [19], although they also held the longest sessions of the three countries studied. This highlights the need for providers to be trained in counseling methods that take couple fertility goals into account. One impact evaluation conducted in Kigali found that an intervention providing family planning counseling with an emphasis on fertility goals resulted in greater adoption of implants (27%) and IUDs (8%) among HIV discordant couples [20]. More research is needed to determine if fertility goal-based counseling is effective in other contexts.

IV. Gaps in the literature

Much of the current literature surrounding knowledge, attitudes, and beliefs about postpartum LARC is patient-focused [21-23]. These studies [21, 23] have identified beliefs and misconceptions that may present barriers to acceptance for women and their partners. However, little research has been done to elucidate potential provider-side factors that may impact the promotion and uptake of LARC in the postpartum period. While capacity-building interventions focused on provider training have showed promise [6], it is unknown which specific areas of knowledge may be lacking from a provider perspective. Further research is necessary to better tailor future interventions to provider needs. Provider attitudes and practices surrounding family planning counseling and postpartum LARC also remain largely unexplored in the literature. The impact of PBF is well-studied at the facility level [12, 24], but its potential influence on providers has not been studied to date, particularly as it pertains to the promotion of FP services.

Chapter 3: Materials and Methods

Setting

The Rwanda Zambia HIV Research (RZHRG) was founded in 1986 with the mission of conducting Couples' Voluntary HIV Counseling and Testing (CVCT) in Rwanda and Zambia [25]. In addition, RZHRG leads family planning interventions to reduce unplanned pregnancy and educate populations about LARC methods. This study was conducted in partnership with RZHRG, with support from a Bill and Melinda Gates Foundation Grand Challenges Exploration Grant to assess the supply and demand of postpartum IUDs in Rwanda. Here, we focus on the provider-side knowledge, attitudes and practices related to provision of postpartum IUD and implant services.

The study was conducted at Kabusunzu and Nyarugunga health centers in Kigali, Rwanda. These health centers were selected because of their long-term relationship with RZHRG and their provision of family planning, antenatal care, and labor and delivery (L&D) services.

Population and recruitment

A convenience sample of health care providers was recruited at Kabusunzu (n=7) and Nyarugunga (n=7) healthcare facilities, for a total sample size of 14. For inclusion in the study, participants had to be currently employed as healthcare family planning (FP) or L&D providers (nurse or midwife) at one of the two study sites and have prior experience inserting IUDs and implants. All participants approached agreed to participate, for a participation rate of 100%.

Ethics

Prior to participating, each participant was introduced to the study by a trained PSF nurse or social worker and underwent the informed consent process in Kinyarwanda or French. This study was approved by the Rwanda National Ethics Committee (RNEC) in Kigali, Rwanda and the Emory University Institutional Review Board (IRB) in Atlanta, Georgia. All participants were compensated with 3,000 Rwandan Francs (RWF).

Data collection

Mixed-methods questionnaires were administered by a trained PSF staff member in-person in July of 2017 at Kabusunzu and Nyarugunga. Data was collected using a tablet with a digitalized survey created using the survey platform Survey CTO. Participants were allowed to select their preferred language to complete the questionnaire, which took an average of 60 minutes to complete. Hospital-providers were surveyed individually.

Measures

Questionnaires were developed in English after a review of the literature surrounding LARC service provision and translated into Kinyarwanda by PSF nurse counselors. Translated questionnaires were then back-translated into English for validity. Questions included a mix of open-ended, multiple choice, and select all that apply. The final questionnaire contained total of 149 questions concerning demographics and knowledge, attitudes, experiences, and practices providing LARC counseling and methods, postpartum family planning counseling, and postpartum IUD and implant services. Participants were also asked for feedback on educational

resources to improve post-partum family planning counseling, as well as their knowledge of and attitudes towards performance-based financing.

Data analysis

For the provider mixed-methods survey, all quantitative variables were analyzed using SAS 9.4 (SAS Institute, Cary, North Carolina, USA) software package. Means and standard deviations (SD) were calculated for continuous variables, while frequencies were tabulated for categorical variables. Continuous variables were also assessed for normality using graphical methods and skewness/kurtosis, with some exhibiting a normal distribution (e.g. age) while others did not (e.g. "how many implants did you insert in the past month"). Some survey questions included a "select all that apply" option which also included an "other" category. Responses under this category were grouped and analyzed in SAS to assess comparable answers from providers. Due to the sparse nature of much of the qualitative data and similarities between provider responses, it was more informative to analyze open-ended questions quantitatively. The majority of open-ended questions were analyzed in MaxQDA 12 (VERBI Software GmbH, Berlin, Germany) using deductively developed codes based on the interview guide. Coding of these responses was validated by a secondary coder using an inter-coder reliability threshold of kappa ≥ 0.8.

Chapter 4: Results

Characteristics of survey participants

All participants (N=14) were female, with half currently working at the Kabusunzu Health Center and the other at Nyarugunga Health Center (Table 1). Of the 14 providers, 86% were

nurses while 14% were midwives. Ages of providers ranged from 28 to 45 years, with a mean age of 35.6 (SD=5.11). All providers had been working in their respective professions for at least four years, with 71% of participants reporting having six or more years of experience as nurses/midwives. Additionally, 71% of providers at Kabusunzu Health Center had been working there for more than six years, while none of the providers at Nyarugunga had been at their place of employment for a period longer than six years. Out of 14 hospital providers approached, all agreed to participate, for a participation rate of 100%. Moreover, all providers reported having a religious affiliation with the majority identifying as Catholic (36%), another 36% identifying as Pentecostal, and 21% identifying as Seventh Day Adventist and the remainder (7%) identifying as Baptist (Table 1).

Table 1. Demographic characteristics of healthcare-providers at Kabusunzu and Nyarugunga Health Centers, Rwanda

Characteristics	**Health Center**				**Overall (n=14)**	
	Kabusunzu (n=7)		**Nyarugunga (n=7)**			
	N/mean	**col %/SD**	**N/mean**	**col %/SD**	**N/mean**	**col %/SD**
Gender, n (%)						
Female	7	100%	7	100%	14	100%
Male	0	0%	0	0%	0	0%
Job title, n (%)						
Nurse	6	86%	6	86%	12	86%
Midwife	1	14%	1	14%	2	14%
Age, mean (SD)	37.0	4.3	34.3	5.8	35.6	5.1
How long have you been a nurse (years)?						
4 to 6 years, n (%)	1	14%	3	43%	4	29%
More than 6 years, n (%)	6	86%	4	57%	10	71%
How long have you been working at this clinic?						

1 to 3 years, n (%)	0	0%	5	71%	5	36%
4 to 6 years, n (%)	2	29%	2	29%	4	29%
More than 6 years, n (%)	5	71%	0	0%	5	36%
Religion, n (%)						
Catholic	3	43%	2	29%	5	36%
Pentecostal	3	43%	2	29%	5	36%
Seventh Day Adventist	1	14%	2	29%	3	21%
Baptist	0	0%	1	14%	1	7%

HC: health center

Knowledge of IUDs and implants

Only 57% of providers reported being trained on IUD insertion versus 79% on implants (Table 2). Moreover, only one provider reported having been trained on postpartum IUD insertion (Table 2). While (n=9) providers mentioned "a need for physical resources (e.g. books, charts or brochures)" in their open-ended responses, most (n=10) placed emphasis on the need for improved education for providers and patients (n=10 for IUD education, n=7 for implant education) (Table 2). Similarly, a lack of training was the most commonly cited non-medical barrier to the acceptability of these methods (n=2 for IUD, n=1 for implants) (Table 2).

There was large variation in response to knowledge questions relating to IUDs (Table 2). In response to the question "How long after an IUD is removed could a fertile woman get pregnant?" 6 providers answered "immediately," 3 providers answered "1 week," one provider answered "3 weeks," and 4 providers answered "4 weeks." In response to "When are the appropriate times to have a postpartum IUD inserted?", 3 providers indicated "immediately after delivery," 2 indicated "within 48 hours of delivery", one indicated "48 hours to two weeks after delivery," and 8 indicated "6 weeks or later." Similarly, when asked "How long after delivery should a postpartum IUD be inserted, so that the expulsion rates are the lowest?", 2 providers

selected “immediately/within 10 minutes,” 4 selected “within 48 hours,” 4 selected “after 6 weeks,” and 4 did not know. This variation indicated widespread disagreement among providers about procedures and best practices for IUD insertion. (Table 2).

Knowledge, attitudes and perceptions of postpartum implants and IUDs

The most common advantages of IUDs according to providers were that the method is long-term (64%), does not contain hormones (57%), and has fewer side effects (36%), while advantages of implants included their ability to delay pregnancy/birth spacing (36%), reduce appointment frequency (36%), and that the method prevents pregnancy and is long-term (29%). The most commonly reported disadvantages of both methods were heavy bleeding (50% for IUD and 57% for implant) and irregular bleeding (36% for IUD and 50% for implant). Expulsion was also widely cited as a disadvantage of IUDs (50%). Headache was commonly cited as a disadvantage of implants (43%). More side effects were reported for implants than for IUDs (Table 2). Qualitative data suggested that patient perceptions of side effects for each method may be a barrier to use, with some providers stating that patients prefer implants due to “fear for its [IUDs] side effects like infections”. Open-ended responses also indicated that ease of insertion may play a role in provider preferences for implants versus IUDs, with one nurse stating that “for the nurse this method [implant] is very easy to give to the client”.

Table 2. Knowledge, attitudes, and practices of long acting reversible contraceptives (LARC) by Health Center

	Kabusunzu		**Nyarugunga**		**Overall**	
	N	%	N	%	N	%

KNOWLEDGE						
Are you trained on inserting IUDs?						
No	1	14%	5	71%	6	43%
Yes	6	86%	2	29%	8	57%
Have you ever received training in postpartum IUD insertion methods?						
No	7	100%	6	86%	13	93%
Yes	0	0%	1	14%	1	7%
Are you trained on inserting Implants?						
No	1	14%	2	29%	3	29%
Yes	6	86%	5	71%	11	79%
After an IUD insertion, when do women come in for a follow-up appointment?						
Never	0	0%	2	29%	2	14%
4 to 6 weeks	7	100%	2	29%	9	64%
More than 6 weeks	0	0%	3	43%	3	21%
How soon could a fertile woman become pregnant after an IUD is removed?						
Immediately	4	57%	2	29%	6	43%
1 week	2	29%	1	14%	3	21%
3 weeks	0	0%	1	14%	1	7%
4 weeks	1	14%	3	43%	4	29%
What are the benefits of postpartum IUDs (*select all that apply*)						
Prevent pregnancy	1	14%	0	0%	1	7%
Delay pregnancy/birth spacing	1	14%	2	29%	3	21%
Effective immediately after insertion	0	0%	1	14%	1	7%
Women are fertile again as soon as removed	1	14%	2	29%	3	21%
Highly effective	1	14%	1	14%	2	14%
Easy to use	0	0%	1	14%	1	7%

Easy to get	0	0%	2	29%	2	14%
Long term method	6	86%	3	43%	9	64%
Doesn't contain hormones	4	57%	4	57%	8	57%
Fewer side effects	3	43%	2	29%	5	36%
What are the benefits of postpartum implants? (*Select all that apply*)						
Prevent pregnancy	1	14%	3	43%	4	29%
Delay pregnancy/birth spacing	3	43%	2	29%	5	36%
Effective immediately after insertion	0	0%	1	14%	1	7%
Women are fertile again as soon as removed	2	29%	0	0%	2	14%
Highly effective	0	0%	1	14%	1	7%
Most effective at preventing pregnancy	1	14%	2	29%	1	7%
Easy to use	1	14%	3	43%	4	29%
Easy to get	0	0%	2	29%	2	14%
Reduces appointments	3	43%	2	29%	5	36%
Long term method	3	43%	3	43%	6	43%
What are the disadvantages of postpartum IUDs (*Select all that apply*)						
Side-effects	1	14%	1	14%	2	14%
Irregular bleeding	4	57%	1	14%	5	36%
Heavy bleeding	3	43%	4	57%	7	50%
Abdominal pain	1	14%	0	0%	1	7%
Affect sexual intercourse	0	0%	1	14%	1	7%
None	1	14%	0	0%	1	7%
Ectopic pregnancy	1	14%	1	14%	2	14%
Causes infection/UTI	2	29%	3	43%	5	36%
Expulsion	5	71%	2	29%	7	50%
What are the disadvantages of postpartum implants? (*Select all that apply*)						
Side effects	2	29%	0	0%	2	14%
Irregular bleeding	3	43%	4	57%	7	50%
Heavy bleeding	4	57%	4	57%	8	57%

Headache	3	43%	3	43%	6	43%
Weight gain	5	71%	2	29%	3	21%
Weight loss	0	0%	3	43%	3	21%
Abdominal pain	0	0%	1	14%	1	7%
Affect sexual intercourse	0	0%	1	14%	1	7%
Hypertension	1	14%	1	14%	2	14%
Not 100% effective	2	29%	0	0%	2	14%
Backache	0	0%	2	29%	2	14%
Vaginal dryness	0	0%	2	29%	2	14%
When are the appropriate times to have a postpartum IUD inserted? *Select all that apply*						
Immediately after delivery	2	33%	1	20%	3	25%
Within 48 hours of delivery	2	33%	0	0%	2	17%
48 hours to 2 weeks	1	17%	0	0%	1	8%
4 weeks to 6 weeks	0	0%	0	17%	0	0%
6-week infant vaccination visit	1	17%	3	50%	4	33%
6 weeks or later	0	0%	1	17%	1	8%
[a] When are the appropriate times to have a postpartum implant inserted? (*Select all that apply*)						
Immediately after delivery	0	0%	1	14%	1	7%
Within 48 hours of delivery	3	43%	2	29%	5	36%
4 weeks to 6 weeks	0	0%	3	43%	3	21%
6-week infant vaccination visit	4	57%	5	71%	9	64%
6 weeks or later	1	14%	3	43%	4	29%
How long after delivery should a postpartum IUD be inserted, so that the expulsion rates are the lowest?						
Immediately/< 10 minutes	2	29%	0	0%	2	14%
Within 48 hours	1	14%	3	43%	4	29%
After 6 weeks	2	29%	2	29%	4	29%
I don't know	2	29%	2	29%	4	29%
What are medical reasons for not inserting an IUD postpartum? (*Select all that apply)*						
UTI or infection	7	100%	3	43%	10	71%
Cervical Cancer	2	29%	3	43%	5	36%

HIV+	1	14%	1	14%	2	14%
Hemorrhage	0	0%	2	29%	2	14%
What are medical reasons for not inserting an implant postpartum? *Select all that apply*						
Hypertension	7	100%	7	100%	14	100%
Other (liver disease, hormonal trouble, obesity, tumor, or hemorrhage)	6	86%	7	100%	13	93%
ATTITUDES						
Delivering counseling on postpartum IUDs is an important part of your job.						
Agree	0	0%	2	29%	2	14%
Strongly agree	7	100	5	81%	12	86%
Delivering counseling on postpartum implants is an important part of your job.						
Agree	0	0%	1	14%	1	7%
Strongly agree	7	100%	6	86%	13	93%
There are always enough supplies for postpartum IUD insertions at the clinic						
Agree	3	43%	2	29%	5	36%
Strongly agree	4	57%	5	71%	9	64%
There are always enough supplies for postpartum implant insertions at the clinic.						
Agree	1	14%	3	43%	4	29%
Strongly agree	6	86%	4	57%	10	71%
Why does your health center insert more implants than IUDs						
Fear of IUDs	6	86%	4	57%	10	71%
Women/clients prefer Implants	1	14%	3	43%	4	29%
What are some barriers you could have in inserting a postpartum IUD?						
IUD medical contraindication	4	57%	2	29%	6	43%

Hemorrhage	1	14%	2	29%	3	21%
Lack of training	1	14%	1	14%	2	14%
None	1	14%	2	29%	3	21%
What are some barriers you could have in inserting a postpartum implant?						
Hypertension	2	29%	3	43%	5	36%
Lack of materials	1	14%	2	29%	3	21%
Lack of training	0	0%	1	14%	1	7%
None	4	57%	1	14%	5	36%
What would you need in order to provide (more) postpartum IUD?						
Training and education on/about IUD method	6	86%	4	57%	10	71%
(Physical) materials	1	14%	2	29%	3	21%
Enough time	0	0%	1	0%	1	7%
What would you need in order to provide (more) postpartum implants?						
More training and education	2	29%	5	71%	7	50%
Materials	5	71%	1	14%	6	43%
Enough time	0	0%	1	14%	1	7%
PRACTICES						
Do you insert IUDs?						
No	1	14%	5	71%	7	50%
Yes	6	86%	2	29%	7	50%
Do you insert Implants?						
No	0	0%	2	29%	2	14%
Yes	7	100%	5	71%	12	86%
How many IUDs did you insert in the past month? Median (lower quartile—upper quartile).	2.5, (2—3)		1 (1—1)		1.5 (0—2.5)	
How many implants did you insert in the past month? Median (lower quartile—upper quartile).	6.5 (5—8)		1 (0—3)		1.5 (0—4)	

Do you document patient's interest in receiving a postpartum family planning method before delivery?						
No	3	43%	1	14%	4	29%
Yes	4	57%	6	86%	10	71%
How do you handle an IUD expulsion?						
Insert a new one	5	71%	5	71%	10	71%
Refer to FP	2	29%	2	29%	4	29%

[a] Of the eligible 14 participants, only 11 responded: IUD: intrauterine devices; SD: standard deviation; FP: family planning

Attitudes and practices surrounding postpartum family planning counseling

Providers expressed universally positive attitudes toward family planning counseling. Most "strongly agreeing" that "delivering counseling on postpartum LARC was an important part of their job", with similar sentiments expressed across HCs and methods (86% for IUDs and 93% for implants) (Table 2). In response to "there are always enough supplies for postpartum IUD insertions at the clinic," 36% agreed and 64% strongly agreed, indicating positive perceptions of the importance of family planning and experiences in service provision (Table 2). For the same statement in relation to postpartum implant insertion resources, 29% agreed and 71% strongly agreed. 71% reported documenting patients' interest in receiving a postpartum family planning method before delivery (Table 2).

Although most providers stated that various other parties should be involved in family planning decisions, including male partners (n=12), doctors/nurses (n=2), and counselors (n=8) (Table 3), some expressed the view that the final decision "only depends on what the woman wants". The majority of providers felt that postpartum family planning options should be discussed during

ANC (79%), labor and delivery (79%), postpartum consultation visits (57%), and six-week infant vaccination visits (57%) (Table 3). In response to the statement, “I can communicate with the pharmacy easily,” 86% strongly agreed and 14% agreed (Table 3). Thirteen of fourteen providers (93%) reported having counseled patients on postpartum implants and IUDs (Table 3).

In our open-ended analysis, one provider described the purpose of counseling as “to remind the clients about FP especially long-term methods, to counsel them about myths and beliefs, explain more for them about side effects,” and another described the context of communication at these counseling sessions as “benefits and side effects, consequences of not attending FP”. Similarly, analysis of open-ended questions showed that providers stated that they used books/brochures (n=5), charts (n=2), pictures (n=3), and physical items (n=7) to facilitate client education activities. This also informed their opinions on resources that are needed or desired to enhance the impact of these counselling sessions. For example, three providers stated that more pictures would be helpful in the educational materials, especially since some clients may be illiterate. Providers generally reacted positively to several FP-related materials shown to them during the interviews, especially stamps: “it will help, best time to use/ record on stamp is first ANC visit with husband”, “it’s good and helpful for selecting a method, normally info is only given after delivery, but the stamp would help them provide this information during ANC as well”. Providers are open to incorporating new materials that might assist in the provision of education around FP.

Table 3: Attitudes and practices surrounding postpartum family planning (FP) counseling by clinic

	Health Center		
	Kabusunzu	Nyarugunga	Overall

	N	%	N	%	N	%
Who is involved in patient's postpartum family planning decisions? (*Select all that apply*)						
Doctors/nurses	0	0%	2	29%	2	14%
Counselors	4	57%	4	57%	8	57%
Male partners	6	86%	6	86%	12	86%
Couple	1	14%	3	43%	4	29%
Where and when do you think postpartum family planning counseling and promotional messages should be provided? (*Select all that apply*)						
ANC Visit	6	86%	5	71%	11	79%
Labor and Delivery	6	86%	5	71%	11	79%
6-week infant vaccination visit	4	57%	4	57%	8	57%
Postpartum consultation visit	6	86%	2	29%	8	57%
I can communicate with the pharmacy easily						
Agree	0	0%	2	20%	2	14%
Strongly agree	7	100%	5	71%	12	86%
Have you ever counseled patients on postpartum IUDs?						
No	1	14%	0	0%	1	7%
Yes	6	84%	7	100%	13	93%
Have you ever counseled patients on postpartum implants?						
No	1	14%	0	0%	1	7%
Yes	6	86%	7	100%	13	93%
What postpartum family planning information is a woman given counseled on after delivery and before they discharge? *Select all that apply*						
Different methods of family planning	7	100%	7	100%	14	100%
Breastfeeding	2	29%	4	57%	6	43%
benefits of family planning	4	57%	4	57%	8	57%

ANC: antenatal care; IUD: intrauterine device

Knowledge and attitudes of PBF by clinic

The majority of providers (79%) were unaware of how much their facility was reimbursed for counseling sessions (Table 4). Providers were generally also not aware of PBF practices at their facilities, with 93% indicating that they did not know how much their facility was reimbursed for each new woman on family planning per month or for each woman continuing on family planning per month (Table 4). Moreover, 86% reported that they did not prefer providing certain methods because of financial reimbursements (Table 4). Despite having limited knowledge of PBF practices, most providers expressed positive attitudes toward FP PBF and expressing the opinion that it improved motivation (n=8) among staff (Table 4). For example, nurse stated that "[the facility] uses the money to buy things for the health center and then split what is left between the staff".

Table 4: Knowledge and attitudes of performance-based financing (PBF) by clinic

	Health Center					
	Kabusunzu		Nyarugunga		Overall	
	N	%	N	%	N	%
Do you know how much is your HC reimbursed by *mutuelle* when you counsel on family planning?						
No	4	57%	7	100%	11	79%
Yes	3	43%	0	0%	3	21%
Do you know how much your health center earn for each continuing woman on family planning from PBF?						
No	6	86%	7	100%	13	93%
Yes	1	14%	0	0%	1	7%

Do you know how much your health center earns for each new woman on family planning per month from PBF?						
No	6	86%	7	100%	13	93%
Yes	1	14%	0	0%	1	7%
Do you know how much a woman pays for at least one family planning method?						
No	3	43%	2	29%	5	64%
Yes	4	57%	5	71%	9	36%
Do you prefer providing certain methods because of financial reimbursements at your health center?						
No	6	86%	6	86%	12	86%
Yes	1	14%	1	14%	2	14%
[a] Please name the FP methods that you know how much a woman pays for.						
IUD	4	100%	5	100%	9	100%
Implant	4	100%	5	100%	9	100%
Pill	4	100%	5	100%	9	100%
Injectable	4	100%	5	100%	9	100%
What about FP PBF works well at your clinic?						
Motivates workers	4	57%	4	57%	8	57%
Aids health center activities	1	14%	0	0%	1	7%
Doesn't know	2	29%	3	43%	5	36%
What about FP PBF does not work well at your clinic?						
Nothing	6	86%	3	43%	9	64%
Delay	1	14%	1	14%	2	14%
Don't know	0	0%	3	43%	3	21%

[a] Of the 14 eligible participants, only 9 women responded

HC: health center; FP: family planning; PBF: performance-based financing

Chapter 5: Discussion

This study aimed to understand the knowledge, attitudes, and practices surrounding postpartum LARC and service provision among healthcare providers in Kigali, Rwanda.

The large variation in provider responses to knowledge-based questions suggests a need for additional training, a statement that was echoed by providers themselves. This is particularly true of postpartum IUD insertion, in which only one provider out of fourteen was trained (Table 2). Lack of provider training in "procedurally demanding" FP methods, particularly IUDs, has been identified as a provider-level barrier to uptake of these methods in other African countries [26]. Those providers who do receive training in LARC insertion may not have clinical experience inserting IUDs or implants [26].

There was also a discrepancy between implant training and insertion: one provider who reported having inserted implants also reported not having been trained (Table 2). Providers demonstrated low knowledge of IUD benefits, optimal time for postpartum insertion, and the length of time it takes to regain fertility after IUD removal. Postpartum timing of insertion is a major factor in the risk of expulsion, which many providers cited as a disadvantage of IUDs [18]. Furthermore, providers were better at identifying risks and side effects of implants and IUDs than at identifying advantages of these methods, which in turn may negatively influence patient attitudes toward these methods (Table 2, 3). A systematic review found that myths and misconceptions surrounding LARC are prevalent among providers and patients, even in high-income countries

[27]. Among the major provider side misconceptions identified were that IUDs are not suitable for a majority of patients, including nulliparous women, those with a history of pelvic inflammatory disorder, and non-monogamous women [27]. Similarly, our findings indicated that contraindications featured prominently in provider identified barriers to postpartum IUD provision. Moreover, studies among women in sub-Saharan Africa [13, 14] have found that contraindications factor highly in women's decision to use a particular FP method, and this may be influenced or exacerbated by interactions with providers. Remedying misconceptions among providers is crucial to ensuring optimal service provision, as well as alleviating patient concerns related to LARC methods.

The lack of trained providers in sub-Saharan Africa [28] presents a major challenge on the supply side of FP. Previous studies [26, 28-30] suggest that knowledge and experience providing IUDs is low among providers in Rwanda, Malawi, Zimbabwe and Zambia. Similarly, a cross sectional study conducted in hospitals in Rwanda in 2015 concluded that 76% of providers at district hospitals had no previous experience providing postpartum contraception [29]. Furthermore, a study conducted by the Rwanda-Zambia HIV Research Group (RZHRG) in Zambia which aimed to integrate fertility goal counseling with LARC access for HIV discordant couples concluded that providers were less likely to be trained to insert or counsel on IUDs than were trained to insert and counsel on implants [20], a finding that was supported by our data (Table 2, 4). Although provider training and enthusiasm alone will not be sufficient to increase uptake of postpartum IUDs, these findings indicate that the lack of trained providers may be a barrier to patient uptake of these methods.

Provider attitudes toward FP counseling were universally positive, suggesting that this is not a barrier to LARC adoption among clients. Although more than 90% of providers said they had counseled clients on postpartum FP options, just over 70% said they had done so prior to delivery. Failure to counsel patients about postpartum FP options in advance may mean that many women miss the optimal time for IUD insertion to reduce the risk of expulsion [18]. In addition, risk of pregnancy in the postpartum period must be effectively communicated prior to delivery [23, 31]. There were differences by health center in the number of providers who reported having documented clients interested in postpartum FP prior to delivery, suggesting that this practice is not standardized. Universal FP counseling prior to delivery will enable women to consider the full range of FP options and to choose the one that is most consistent with their long-term fertility goals [15].

PBF did not appear to influence promotion of one FP method over another at the provider level. Not only did 86% of providers state that reimbursements did not influence their promotion of one specific FP methods over another, they were also not aware of how much their facilities were reimbursed for FP services (Table 4). The majority of providers demonstrated low knowledge of how PBF was administered at their facility, although they did express the view that PBF positively influenced motivation among their colleagues (Table 4). This may be due to the fact that decision-making regarding PBF occurs at a higher level and does not directly involve providers [24].

Limitations

The generalizability of this study was severely limited by sample size. Although questionnaires were administered using a mixed-method approach, the lack of depth in open-ended responses made a quantitative approach more informative during analysis. Only two clinics were sampled in the study, both in Kigali. This makes it difficult to generalize our findings, especially to clinics in rural areas. Use of tablets with a digitalized survey could have introduced errors during the data collection phase, evidenced by some discrepancies in the data. For example, 86% of providers reported providing implant services (i.e. insertion) while only 79% reported having trained on implant insertion. While there was no question assessing whether providers were trained to counsel clients, the majority of participants reported that delivering counseling on postpartum IUDs and implants is an important part of their job—86% and 81%, respectively.

Chapter 6: Implications and Future Recommendations

While Rwanda has made tremendous progress in increasing the uptake of family planning through promotion and increased access, gaps remain in unmet need among women who are not currently using contraception. Moreover, many women's contraceptive choices do not align with their fertility goals. Previous studies [15, 23, 32] in Rwanda and neighboring countries suggest that fertility rates, although declining have not kept pace with desired family size. Trends in desired family size suggest that demand for contraception may increase in the coming years, and it is imperative that current family planning efforts keep pace with this demand.

Increasing the adoption of postpartum LARC, especially postpartum IUDs, will require additional capacity-building of nurses and other healthcare workers in the provision of fertility

goal-based family planning counseling. Providers will be better equipped to address patient fears and misconceptions if they are confident in their own knowledge of benefits and risks of LARC methods. Evidence-based materials can be made available for providers and their patients so that benefits and risks of each method can be weighed accordingly. This recommendation was echoed in a brief from Family Health International (FHI) and the government of Rwanda, which suggested the use of the Pregnancy Checklist to enhance the effectiveness of provider communication around FP [31]. Providers in our sample acknowledged the benefits of such additional educational resources for counseling and record-keeping (Table 2). Counseling must take place prior to delivery so that IUD insertion can be optimally timed for those women who wish to adopt IUDs. Tying early counseling to PBF indicators and providing up-to-date, evidence-based resources for client education may be one way of standardizing the practice across facilities.

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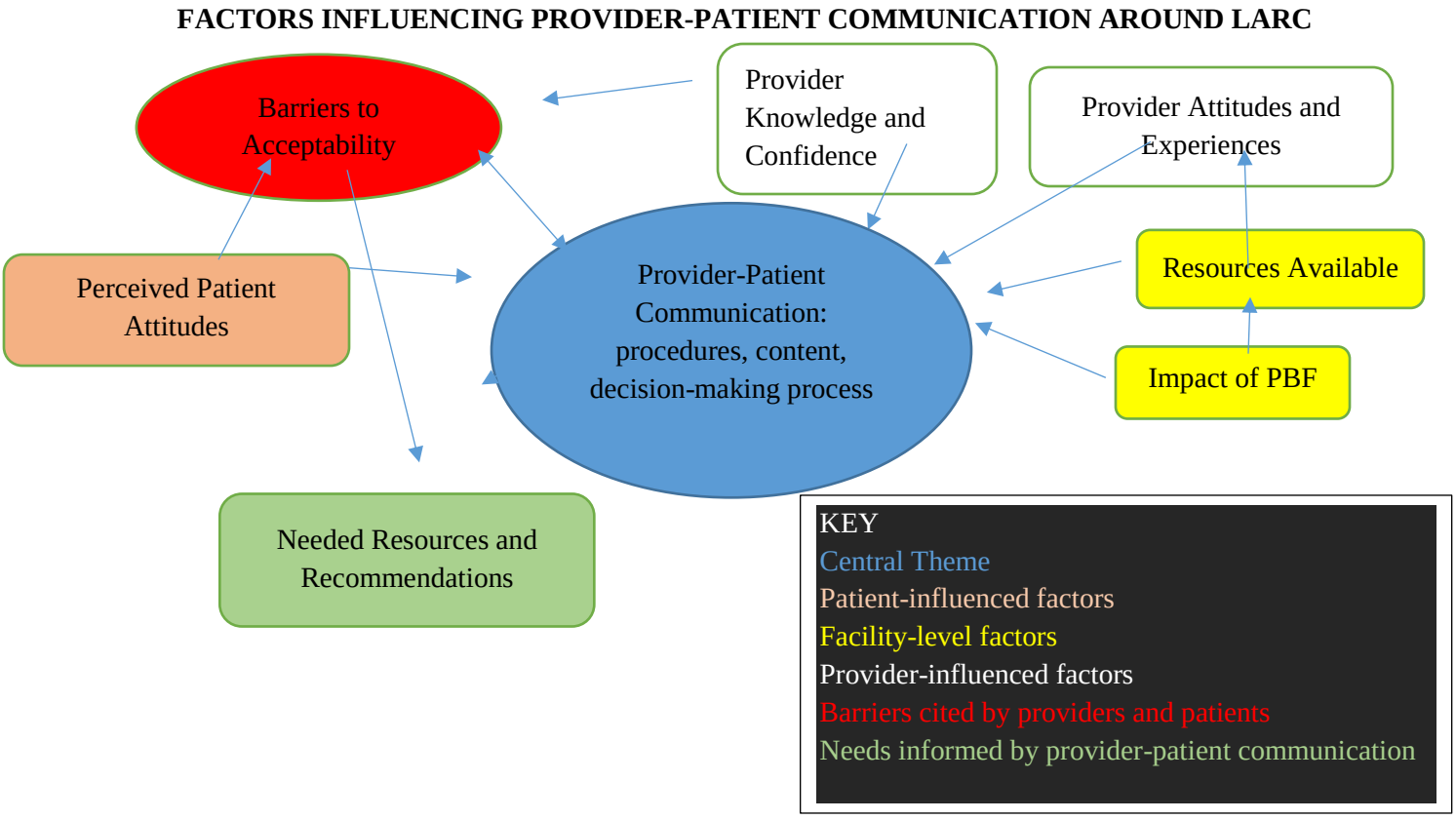
Appendix



Research Question: How do provider knowledge, attitudes, and practices impact provider-patient communication surrounding LARC?

Description of Conceptual Diagram

This analysis is centered around communication between providers and their patients regarding implants and IUDs, factors that influence these interactions, and how barriers to provider-patient communication can inform recommendations for improvement. Communication around family planning is influenced from three distinct directions: the patient, the provider, and the facility.

Because these themes are developed from a provider perspective, we can only glean a second-hand view of these providers' perceptions of patient attitudes towards implants and IUDs. For example, **"fear for the IUD insertion procedure, fear for its side effects like infections"** was cited as a common reason that women might prefer implants to IUDs. Providers also expressed the belief that their interactions with patients can influence patient attitudes and beliefs around this topic, describing the purpose of counselling as **"to remind the clients about FP especially**

long-term methods, to counsel them about myths and beliefs, explain more for them about side effects".

The most commonly cited provider-level factor influencing communications around LARC was their own knowledge and confidence in discussing implants and IUDs, which was in turn informed by their personal experiences and attitudes. Many providers emphasized the relative time required and ease of different methods: **"for the nurse this method [implant] is very easy to give to the client**". Nine of the fourteen providers mentioned training or education as a key resource for the provision of IUDs. While a few providers did mention physical resources, most of them placed more emphasis on education for providers and patients. Conversely, a lack of knowledge-based resources was the most commonly cited non-medical barrier to the acceptability of these methods.

Facility-level factors were intimately associated with material and logistical barriers to LARC. Providers were also asked about performance-based financing, with most stating that this practice improved motivation among staff and brought in additional resources: **"They use the money to buy things for the health center and then split what is left between the staff"**.

Providers described the process of FP counselling in terms of the content of the communication (**"benefits and side effects, consequences of not attending FP**"), the procedures followed (timing, educational materials used), and the final decision-making process (**"It only depends on what women wants"**). Providers stated that they used books and brochures, charts, pictures, and physical items to facilitate client education activities. This also informed their opinions on resources that are needed or desired to enhance the impact of these counselling sessions. Providers generally reacted positively to several FP-related materials shown to them during the interviews, especially stamps: **"it will help, best time to use/ record on stamp is first ANC visit with husband", "it's good and helpful for selecting a method, normally info is only given after delivery, but the stamp would help them provide this information during ANC as well".** Providers are open to incorporating new materials that might assist in the provision of education around FP.