Can Remote Personalized Digital Counseling Improve Postpartum Contraceptive Use?*

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Abstract

Postpartum family planning (PPFP) is essential for promoting healthy birth spacing and supporting women's reproductive autonomy. We evaluate a personalized digital counseling intervention delivered via text messages in a randomized controlled trial of 4,751 pregnant women across 20 counties in Kenya. The intervention, built on an existing government-endorsed digital health platform, combined (i) targeted educational messages focused on healthy birth spacing and the lactational amenorrhea method (LAM), (ii) a decision aid for method choice based on women's preferences, and (iii) behavioral nudges to support planning and follow-through for method uptake. Message content and delivery were aligned with national and global PPFP guidelines. The intervention improved LAM knowledge by 36% at 3 months postpartum, increased intention to continue family planning among existing users by 4% at 6 months, and raised perceived counseling quality by 2%. We find no significant effect on modern contraceptive use at either 3 or 6 months postpartum–the study's primary outcomes. Analysis of mechanisms suggests that limited engagement with the personalized content, persistent demand-side frictions, and supply-side constraints contributed to the null effects. Nevertheless, improvements in knowledge, intentions, and counseling perceptions may yield downstream benefits, particularly given the recurring nature of contraceptive decision-making. These findings highlight both the potential and the limits of light-touch digital interventions to support reproductive health behaviors at scale.

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1 Introduction

Maternal and child mortality remain pressing challenges in many low- and middle-income countries (Cresswell et al., 2025; UN IGME, 2025b). In Kenya, the setting for this study, the maternal mortality ratio stands at approximately 379 deaths per 100,000 live births (World Health Organization, 2025), and the under-five mortality rate is 40 deaths per 1,000 live births (UN IGME, 2025a). These figures remain far above global targets, including the Sustainable Development Goals, which call for fewer than 70 maternal deaths per 100,000 and fewer than 25 under-five deaths per 1,000 by 2030 (United Nations, 2023).

One important, modifiable risk factor for maternal and child mortality is closely spaced pregnancies. The World Health Organization (WHO) recommends a minimum interpregnancy interval of 24 months to reduce the risk of adverse outcomes such as preeclampsia, uterine rupture, preterm birth, and low birth weight (World Health Organization, 2013; King, 2003; Rousso et al., 2002; Conde-Agudelo et al., 2007). Yet in Kenya, nearly half of all pregnancies occur within two years of a previous birth (Moore et al., 2015).

Contraceptive counseling and access to effective postpartum family planning (PPFP) methods are critical for supporting healthy birth spacing and reproductive autonomy. In Kenya, uptake remains suboptimal: only about 50% of women report using a modern method by six months postpartum (Track20 Project, 2024), despite national guidelines and evidence highlighting the importance of PPFP.

Barriers to postpartum contraceptive uptake are multifaceted, beginning with gaps in timely, clear, and personalized information (Blazer and Prata, 2016). The lactational amenorrhea method (LAM) illustrates this challenge: though more than 98% effective when three conditions are met—exclusive breastfeeding, infant under six months, and no return of menses—it remains underused and poorly understood (Labbok et al., 1997; Tran et al., 2018). National and international guidelines recommend transitioning from LAM to another modern method by six months postpartum or earlier if any condition no longer holds (Kenya Ministry of Health, 2018; World Health Organization, 2013). Persistent confusion around LAM's correct use reflects broader informational shortcomings in postpartum counseling.

In addition to information barriers, systemic and behavioral factors limit contraceptive uptake. Health systems often face staff shortages, high patient volumes, and inconsistent provider training, which reduce the quality of in-person counseling (Tumlinson et al., 2015; Ouedraogo et al., 2020). Physical access and affordability also present challenges. Long distances to facilities and high out-of-pocket costs restrict access to services, particularly to long-acting or permanent methods (Benova et al., 2019; Naanyu et al., 2013). Even when services are available, behavioral constraints such as difficulty planning ahead or acting

on intentions can limit uptake (McConnell et al., 2018). These barriers persist despite national and global guidelines that emphasize respectful, integrated, and preference-sensitive counseling across the antenatal, delivery, postnatal, and immunization continuum (World Health Organization, 2013; Kenya Ministry of Health, 2018; Blazer and Prata, 2016).

Digital platforms offer a promising way to expand access to contraceptive counseling in overstretched health systems. In Kenya, where mobile phone penetration is high, short message service (SMS) interventions can deliver timely, personalized information directly to women, offering a potentially scalable and cost-effective complement to in-person care. However, rigorous evidence on the effectiveness of these interventions for postpartum contraception remains limited.

To address this gap, we conducted a randomized controlled trial (RCT) enrolling 4,751 pregnant women across 20 counties in Kenya. The goal of the intervention was to strengthen women's knowledge of contraceptive methods and the importance of healthy birth spacing, address misconceptions about postpartum pregnancy risk, and support informed method choice, planning, and uptake. All participants were enrolled in PROMPTS, an AI-powered SMS platform developed by Jacaranda Health that delivers personalized maternal and newborn health messages tailored to each woman's pregnancy and postpartum stage (Jacaranda Health, 2023). The standard PROMPTS content includes messages on antenatal care, postpartum care, breastfeeding, and infant immunizations, as well as six one-way SMS text messages focused on PPFP.

Participants randomized to the treatment group received additional enhanced content: (1) targeted educational messages focused on healthy birth spacing and the lactational amenorrhea method (LAM); (2) a decision aid for method choice in the form of a shared decision-making tool that ranks contraceptive methods based on user preferences; and (3) behavioral nudges to support planning and follow-through for method uptake. The intervention was co-developed with local clinical and human-centered design experts, with careful attention to cultural sensitivity and consistency with both national and international family planning guidelines. The goal was not to coerce women into adopting any particular method, nor to replace the role of healthcare providers. Rather, the intervention aimed to support women in understanding the benefits of postpartum contraception and in identifying methods aligned with their fertility goals and personal preferences. Upon forming an initial preference, women were encouraged to discuss their choices with a provider during one of the many routine contact points throughout pregnancy and the postpartum period.

Our primary outcomes were self-reported use of modern contraceptive methods at two key postpartum time points: 3 months (early postpartum) and 6 months (mid-postpartum). These time points align with critical windows for contraceptive initiation, including the

typical end of exclusive breastfeeding and the recommended transition from LAM to other modern methods. Secondary outcomes included uptake of most effective or moderately effective methods, satisfaction with the contraceptive method used, knowledge of LAM, and intention to continue family planning among existing users. We also assessed participants' perceptions of the quality of the counseling messages. These outcomes provide insight into how the intervention may influence contraceptive behavior by fostering understanding and supporting better alignment between individual preferences and method choice.

The intervention improved knowledge of LAM by 36% at 3 months and increased intention to continue family planning by 4% at 6 months. It also enhanced user-rated message quality by 2%, primarily due to higher perceived helpfulness of treatment group messages for learning about and selecting contraceptive methods. Despite these improvements, we found no overall impact on modern method uptake at either 3 or 6 months postpartum. These null results are precise. We can rule out increases in uptake larger than 4.3% at endline, relative to the control group's uptake rate of 69%. Heterogeneity analyses along many dimensions show that the effect of the intervention on primary outcomes is consistently negligible across subsamples, including among women who, ex ante, were expected to have greater unmet demand for contraception. This includes those who no longer want children, those who are contraceptive naive, and those living within walking distance of their antenatal care clinic.

Exploration of mechanisms suggests two related reasons for the null results on contraceptive uptake. First, interaction with the counseling tool was limited: only 20% of women chose to engage with the shared decision-making tool when prompted, and just 6% completed the full counseling flow. Second, among those not using any method, nearly half cited lack of desire to delay or avoid pregnancy. The remainder cited demand-side reasons such as fear of side effects, infertility, or impact on breastfeeding, along with persistent knowledge gaps. These gaps may not have been addressed effectively due to limited engagement with the intervention. Treatment group women were slightly more likely to cite supply-side barriers, though these were mentioned by only 6% of women.

These findings should be interpreted in the context of both the study population and the intervention's delivery model. Participants in this study were drawn from the PROMPTS platform, which tends to attract women with higher levels of education and prior exposure to reproductive health services compared to the general population of pregnant women in Kenya. Women in the control group received substantial educational content through the standard PROMPTS package. Their uptake of modern contraceptives at 6 months postpartum (69%) was markedly higher than national estimates (approximately 50%) (Track20 Project, 2024), suggesting a limited margin for additional improvement. Even so, the observed gains in knowledge, contraceptive intentions, and perceived counseling quality among

treatment group participants are noteworthy, given the low marginal cost of delivering personalized digital content at scale. These improvements may generate downstream benefits, especially in light of the recurring nature of contraceptive decision-making.

Our study provides new evidence on the effectiveness of a remote digital counseling tool for PPFP informed by behavioral science. We contribute to three strands of literature.

First, we contribute to the broader economics literature on demand- and supply-side drivers of contraceptive use. Many interventions focus on financial barriers, such as subsidies, but these often yield limited impacts. For example, Dupas et al. (2025) found that full subsidies for modern contraception in Burkina Faso did not increase use or reduce fertility, even when combined with interventions to address misperceptions about social norms or child mortality. In Kenya, McConnell et al. (2018) found that removing user fees did not substantially raise contraceptive use and highlighted the importance of behavioral barriers. These results are consistent with findings from Miller et al. (2025), who show that correcting misbeliefs about pregnancy risk, aligning partner preferences, and addressing concerns about contraceptive effectiveness may matter more than affordability. Our intervention followed this approach by emphasizing healthy spacing, correcting beliefs about postpartum pregnancy risk, and supporting method planning and follow-through.

Second, we add to evidence on mobile health for contraception in low-resource settings. A systematic review (Aung et al., 2020) reports mixed results across eight RCTs, with effectiveness linked to push content, tailoring, interactivity, and motivational support. In Kenya, prior RCTs are also mixed: Johnson et al. (2017) found that an SMS "pull" service improved knowledge but not uptake, while Unger et al. (2018) and Harrington et al. (2019) reported gains from tailored push messages. The Unger and Harrington trials were small in sample size (300 participants or fewer), recruited from a limited number of facilities, and their interactive components required active nurse involvement, which constrains scalability. By contrast, we test a fully automated push and pull design that combines behaviorally guided interactive SMS, deployed at national scale across diverse settings spanning nearly half of Kenya's counties.

Third, we contribute to the literature on choice architecture and digital decision tools in reproductive health. Insights from behavioral economics and cognitive psychology suggest that well-structured tools can improve decision quality, especially when choices are complex or unfamiliar (Deck and Jahedi, 2015; Bordalo et al., 2013; Thaler et al., 2013). Interventions such as the *My Birth Control* app in the U.S. have improved knowledge and counseling satisfaction, although they did not affect method continuation (Dehlendorf et al., 2017, 2019). Other client-centered approaches like the Population Council's Balanced Counseling Strategy (BCS) have shown some impact on postpartum contraceptive use, particularly

when husbands were involved (Salmah et al., 2020), although rigorous evidence on decision quality remains limited. Karra et al. (2021) found that tailored counseling shifted women's stated ideal method but not actual behavior, possibly due to limited exposure to alternative methods or decision deferral.

Among the most promising tools is the provider-facilitated shared decision-making model evaluated by Athey et al. (2023) in Cameroon, which significantly increased uptake of long-acting methods. The authors cross-randomized price discounts and found that discounts had no added effect beyond the shared decision-making tool. Their results suggest that preference-aligned counseling may be more influential than financial incentives. The authors posit that the shared decision-making tool could be adapted for at-home use. Our study tested this possibility directly by deploying a remote, SMS-only shared decision-making application across diverse Kenyan settings. The lack of an effect on contraceptive uptake highlights the limits of digital counseling alone, especially in the absence of sustained user engagement and robust health system support.

The remainder of the paper is organized as follows. Section 2 describes the study methods. Section 3 presents the main findings. Section 4 discusses these findings. Section 5 concludes.

2 Methods

2.1 Study Setting and Population

PROMPTS is an AI-enabled SMS platform developed by Jacaranda Health that delivers personalized health information and reminders to pregnant women and new mothers in Kenya to support timely care-seeking (Jacaranda Health, 2023; Ochieng' et al., 2024; Vatsa et al., 2025). Since its launch, PROMPTS has reached over two million women across the country. Messages are sent on behalf of each woman's county government, reinforcing the credibility and trustworthiness of the service. The platform is offered free of charge to women, with an estimated lifetime operating cost of approximately $0.74 per user (Jacaranda Health, 2023).

Enrollment typically occurs during a woman's first antenatal care visit or shortly after delivery and may be initiated either by Jacaranda Health using public facility patient databases or by the woman herself through direct sign-up at the facility. Participation is confirmed via opt-in SMS. Once enrolled, users receive messages aligned with their pregnancy stage and postpartum timeline. These include reminders for antenatal care, postnatal care, and infant immunizations, as well as educational content on pregnancy, newborn care, breastfeeding, and early childhood development. Messaging continues through 12 months postpartum. Users can also submit health-related questions to an AI-powered helpdesk,

which is supported by human agents when needed.[1]

This study was embedded within the PROMPTS platform. Women had already enrolled in PROMPTS and consented to receive SMS health messages from Jacaranda Health. Between February and April 2024, we contacted PROMPTS users aged 15–49 to screen for study eligibility. Eligible participants were 6 to 8.5 months pregnant and had access to an SMS-capable phone. All eligible women provided separate informed consent to participate in the research study.

We note that the study was conducted during a period of policy transition in Kenya's national health financing system. In October 2024, the government implemented a major reform, replacing the National Hospital Insurance Fund (NHIF) with the Social Health Insurance Fund (SHIF) (Bowmans, 2024). This policy shift disrupted the financing of maternity services and reportedly led to increased out-of-pocket costs, particularly in disadvantaged regions such as the Coast (Kenya Ministry of Health, 2024; Government of Kenya, 2024; Mumbi, 2024; Macharia, 2024). These disruptions may have constrained women's ability to act on their contraceptive intentions, potentially influencing the intervention's impact. We examine the role of supply-side barriers in Section 3.7.

2.2 Conceptual Framework

We model postpartum family planning choice as a discrete choice over method $j \in \{0, 1, \ldots, J\}$, where $j = 0$ denotes non-use. Let the *true* payoff from option j for woman i be

$$V_{ij} \;=\; B_{ij}(j) \;-\; C_{\text{now},ij}(j) \;-\; \beta_i\, C_{\text{future},ij}(j) \;+\; \varepsilon_{ij}, \tag{1}$$

where $B_{ij}(j)$ captures the current benefits of protection against undesired pregnancy, $C_{\text{now},ij}(j)$ are initiation costs (time and logistics, fees and effort, immediate side effects, and relational frictions), $C_{\text{future},ij}(j)$ are deferred costs (maintenance, later side effects, removal or switching), $\beta_i \in (0, 1]$ is a discount factor applied to future costs (Laibson, 1997; Mullainathan and Shafir, 2013), and ε_{ij} is an idiosyncratic shock observed at choice time.

Choices are made on the basis of *perceived* payoffs, which may differ from (1) due to false beliefs or limited knowledge:

$$\widehat{V}_{ij} \;=\; \widehat{B}_{ij}(j) \;-\; \widehat{C}_{\text{now},ij}(j) \;-\; \beta_i\, \widehat{C}_{\text{future},ij}(j) \;+\; \varepsilon_{ij}. \tag{2}$$

[1]The platform uses natural language processing (NLP) to triage incoming messages based on clinical urgency. Messages flagged as urgent are escalated to a trained clinical helpdesk agent, who ensures that women in need are promptly connected to appropriate care.

The woman chooses

$$j^* = \arg \max_{j \in \{0,\ldots,J\}} \widehat{V}_{ij}. \tag{3}$$

This set-up nests standard frictions documented in the literature: misperceptions about pregnancy risk and method effectiveness that shift $\widehat{B}_{ij}(j)$ (Miller et al., 2025); uncertainty about side effects and recovery that inflate $\widehat{C}_{\text{now},ij}(j)$ or $\widehat{C}_{\text{future},ij}(j)$; and planning costs that raise $\widehat{C}_{\text{now},ij}(j)$ (Thaler et al., 2013). Bandwidth constraints around childbirth can further impede follow-through (Mani et al., 2013; Shah et al., 2012; Mullainathan and Shafir, 2013). We treat β_i as invariant to the intervention.

The intervention operates through two channels. First, an information channel that reduces the gap between perceived and true components, moving $\widehat{B}_{ij}(j)$ and $\widehat{C}_{\text{now},ij}(j), \widehat{C}_{\text{future},ij}(j)$ toward $B_{ij}(j)$ and $C_{\text{now},ij}(j), C_{\text{future},ij}(j)$ by clarifying pregnancy risk after delivery, recommended spacing, method effectiveness, and LAM eligibility (Blazer and Prata, 2016; Tran et al., 2018; Labbok et al., 1997). Second, a cost-reduction channel that lowers real and perceived initiation frictions $C_{\text{now},ij}(j)$ via shared decision-making (better attribute matching and expectation setting) and timed nudges aligned with routine contacts (Karra et al., 2021; Athey et al., 2023; Thaler and Sunstein, 2008; McConnell et al., 2018). LAM is addressed by clarifying the three eligibility criteria and providing transition guidance when any criterion no longer holds (Labbok et al., 1997; Tran et al., 2018). Details of the timing and content of the intervention are presented in the next subsection.

2.3 Intervention Design

Figure 1 summarizes the timeline and key features of the intervention. Participants across 20 Kenyan counties were randomly assigned in a 1:1 ratio to the treatment or control group, with randomization stratified by geographic location (county group)[2] and age group[3] to ensure balance. Figure B1 shows the geographical distribution of the sample.

All participants received PROMPTS' standard content, including six messages on PPFP and general messages during pregnancy and the postpartum period. The six PPFP messages were sent at 21, 36, 39, 42, and 45 days, and again at 5.5 months postpartum. These messages covered topics such as the benefits of spacing births by at least two years, modern contraceptive methods, and a reminder that fertility can return soon after childbirth. A prior study has found that women who received these family planning messages were nearly twice as likely to use any contraceptive method and more than twice as likely to adopt a LARC method compared to controls (Jones et al., 2020). Nevertheless, uptake of modern family

[2]Counties were grouped into four categories to avoid small cell sizes: Central Kenya (which includes Nairobi), Western Kenya, Eastern Kenya, and Coastal Kenya.

[3]Age categories were defined as <24, 25–29, and 30+.

planning at 8 weeks postpartum among recipients of the six PPFP messages was 57.5%, indicating scope for improvement.

While this standard content provides general information, it does not tailor counseling to individual women's preferences or align fully with recommended best practices for contraceptive counseling outlined in national and international guidelines. These best practices emphasize shared decision-making, personalized support, and the integration of contraceptive counseling across routine maternal and child health services (antenatal care, delivery, postnatal care, and child immunization visits) to ensure that women are reached at multiple touchpoints (Kenya Ministry of Health, 2018; World Health Organization, 2013). To address this gap, the treatment group received three additional components designed in collaboration with local clinical experts and human-centered design consultants to enhance personalization, cultural relevance, and informed decision-making[4]:

1. **Educational messages:** Women in the treatment group received supplemental counseling messages through 5.5 months postpartum[5]. These messages were designed to address key gaps in postpartum contraceptive knowledge and reflect national and international guidelines recommending early and repeated counseling across the continuum of maternal and child health care. The first informational message, sent at study enrollment, introduced the concept of family planning and provided an overview of available methods. Subsequent messages included counseling on return to fertility and healthy birth spacing, delivered 21 days postpartum, before the 6-week visit when many women remain at risk of unintended pregnancy. Two additional message flows were sent at 2.5 and 5.5 months focused on the LAM, a highly effective method if three clinical criteria are met: (i) the baby is under 6 months of age, (ii) the mother is exclusively breastfeeding, and (iii) menstruation has not resumed (Labbok et al., 1997).

2. **Shared decision-making tool:** This feature was designed to help women identify a postpartum contraceptive method aligned with their preferences. At 8 to 9 months of pregnancy, women received a text message asking whether they would like help selecting a method. This timing aimed to engage women during antenatal care, while also reaching them close to delivery, when planning for postpartum contraception becomes more immediate. Those who accepted were prompted to rank their two most important

[4]We note that the study was not designed to isolate the individual effects of each of these three components. Our primary analysis evaluates the overall impact of the bundled intervention. Although we report descriptive data on engagement with individual components, we do not attempt to disentangle their relative contributions to the observed outcomes.

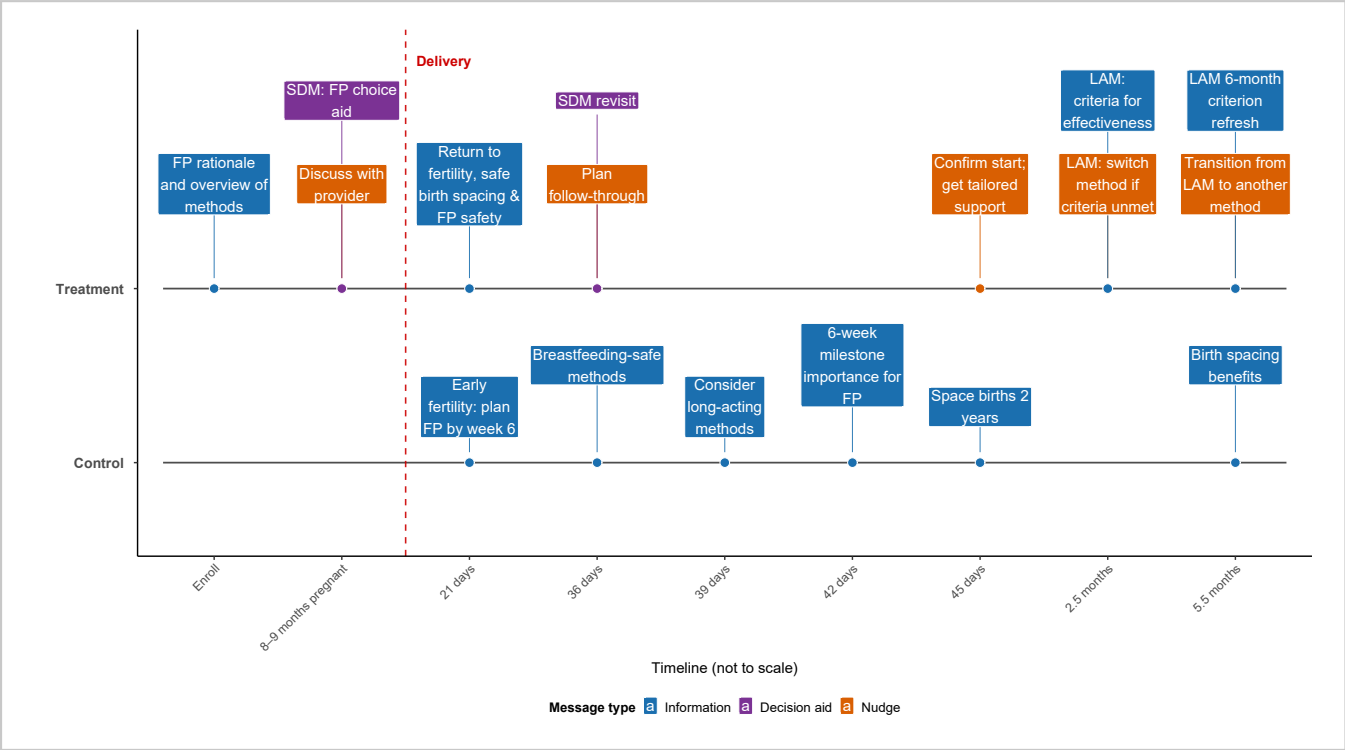
[5]Women could also request more information about any method at any time.

attributes in a contraceptive method (e.g., effectiveness, reversibility, duration)[6]. Based on their input, the platform used a decision tree to recommend up to three methods that best matched their stated preferences. Women could then read more about each option and were asked to select one to discuss with a provider. For those who had responded that they may be interested in selecting a method later, the offer was repeated at 36 days postpartum. This timing was selected to align with the routine 6-week postpartum check, a standard contact during postnatal care. Clinical guidelines recommend that women who are not exclusively breastfeeding initiate a modern contraceptive method by or before this point, as pregnancy can occur as early as 45 days after birth (Kenya Ministry of Health, 2018; World Health Organization, 2013).

3. **Behavioral nudges:** To support women in bridging intention and action, the platform delivered a series of behavioral nudges timed around these care touchpoints. For women who engaged with the shared decision-making feature, a nudge sent at 8 to 9 months of pregnancy encouraged them to discuss their preferred method with a provider during their final antenatal care visit or an upcoming postnatal care or child immunization encounter. At 36 days postpartum, a reminder reinforced this plan. At 45 days postpartum, shortly after the recommended 6-week postpartum visit, a message asked whether the woman had started using contraception. If not, she was prompted to indicate the reason, and the system offered tailored support when possible, such as additional information or help locating services. At 2.5 months postpartum, a message flow checked whether women met the LAM effectiveness criteria. If any criterion was not met, women were nudged to transition to a more effective modern method. A final reminder at 5.5 months postpartum encouraged starting another method before the baby turned six months.

[6]The full list of attribute options included: (1) a method that is highly effective; (2) a method that lasts a long time (3 months or more); (3) a method that allows for regular periods; (4) a method that is safe to use while breastfeeding; and (5) a method that can be stopped when trying to become pregnant soon.

Figure 1. Messaging Timeline and Components by Study Arm (Control vs. Treatment)



Abbreviations: FP = family planning; LAM = lactational amenorrhea method; SDM = shared decision-making.

Notes: The figure depicts a discrete (not-to-scale) schedule of PROMPTS SMS content for each study arm. Control group participants received six postpartum *information* messages at 21, 36, 39, 42, and 45 days, and at 5.5 months postpartum. The Treatment arm received these same six messages plus: (i) *information* messages at study enrollment, 21 days, 2.5 months, and 5.5 months postpartum, including LAM guidance with instructions to transition if LAM criteria are not met; (ii) a *decision aid* (SDM tool) at 8–9 months of pregnancy, with a revisit prompt at 36 days postpartum for those who deferred; and (iii) a series of *nudges* at 8–9 months of pregnancy (discuss plan with provider), 36 days postpartum (plan follow-through), 45 days postpartum (confirm start; offer support); and 2.5 months and 5.5 months postpartum (transition from LAM if conditions are no longer met). Boxes are color-coded by message type (Information, Decision aid, Nudge). When multiple messages were scheduled on the same day, they were sent as distinct SMS texts.

2.4 Data Collection and Outcomes

2.4.1 Data Collection

Women registered on the PROMPTS platform received a text message inviting them to participate, with the option to opt out by replying. This opt-out approach yields a selected sample that mixes highly interested participants with others who ignore the invitation despite low interest; we discuss related limitations in Section 4.

Those who did not opt out were contacted by trained enumerators for phone-based eligibility screening and informed consent. Eligible and consenting women completed a baseline survey and were then randomized 1:1 to the control or treatment group.

The baseline survey was conducted between February and April 2024, followed by phone-based midline and endline surveys at approximately 3 and 6.5 months postpartum, respec-

tively. Follow-up data collection was timed relative to each woman's reported delivery date. The midline survey was initially scheduled based on the expected delivery date collected at baseline. Upon first contact, enumerators asked each woman to report her actual date of delivery. If she was found to be less than 2.5 months postpartum, the call was rescheduled for a later date. The endline survey was then scheduled using actual delivery dates recorded at midline. Enumerators attempted up to eight calls over seven days for each follow-up. Women received mobile airtime worth KES 100 (approximately USD 0.77) for each survey they completed.

Surveys gathered data on self-reported contraceptive use, method initiation timing, LARC uptake, LAM knowledge, satisfaction with the method used, intention to continue family planning, and perceptions of the SMS content. Enumerators were trained to help respondents approximate timing of method initiation when exact dates were uncertain. At each follow-up, women were reminded that participation was voluntary and that they could skip any questions or withdraw at any point. To reduce emotional burden, women who experienced miscarriage, stillbirth, or infant loss completed a shortened midline questionnaire and were offered information on mental health resources, including the "Nena na Binti" counseling hotline. These participants were not contacted for the endline survey.

Survey instruments were adapted from validated national and international sources, including the Kenya Demographic and Health Survey (KDHS) (KNBS and ICF, 2023), Performance Monitoring for Action (PMA) (PMA Kenya, 2023), and prior family planning studies (Karra et al., 2021; Mandal et al., 2020; McConnell et al., 2018). In addition to demographic and reproductive health modules, the surveys included items on knowledge, attitudes, decision-making autonomy, and partner dynamics. To explore behavioral constraints, we incorporated validated modules on perceived stress, risk preferences, self-efficacy, and executive function, drawing on behavioral economics research conducted in Kenya and globally (Falk et al., 2023; Esopo et al., 2018).

A complete list of prespecified outcomes, definitions, and data collection time points is available on the ClinicalTrials.gov study page[7]. In this paper, we focus on a core set of outcomes most central to the intervention's theory of change: modern contraceptive use at 3 and 6 months postpartum (primary outcomes), and key secondary outcomes including adoption of most effective or moderately effective methods, LAM knowledge, method satisfaction, intention to continue family planning, and user-rated quality of the counseling messages.

[7] https://clinicaltrials.gov/study/NCT06266780

2.4.2 Primary Outcomes

The primary outcomes were self-reported use of a modern contraceptive method at two time points: 3 months and 6 months postpartum. Modern methods were defined according to the PMA Kenya classification (PMA Kenya, 2023), and include sterilization, implants, intrauterine devices (IUDs), injectables, oral contraceptive pills, condoms, diaphragms or cervical caps, spermicides, and LAM.[8] LAM was only considered a modern method at 3 months postpartum, given that it is no longer effective beyond six months.

We selected these time points based on clinical and policy relevance. The 3-month mark aligns with WHO guidance to initiate contraception by six weeks postpartum (World Health Organization, 2013), while the 6-month point corresponds with the end of LAM effectiveness and allows measurement of sustained method use.

Because expected delivery dates reported at baseline were sometimes imprecise, some women completed the midline and endline surveys slightly after 3 and 6 months postpartum. In such cases, we used responses from either follow-up survey to impute contraceptive use at 3 and 6 months, following McConnell et al. (2018). For example, if a woman reported using a modern method at midline and indicated she had initiated it before 5.5 months postpartum, we inferred use at 6 months.[9]

2.4.3 Secondary Outcomes

We analyzed secondary outcomes aligned with the intervention's objectives by measuring uptake of the most effective or moderately effective methods. Specifically, we considered (i) permanent methods (male and female sterilization), (ii) long-acting reversible contraceptives (LARCs; implants and intrauterine devices), and (iii) short-acting reversible contraceptives (SARCs). We operationalize SARCs as injectables and pills, which are the dominant short-acting methods in this setting. This grouping captures a broad set of top-tier options that plausibly match heterogeneous preferences over duration, user control, side-effect profiles, and ease of discontinuation. Typical-use failure rates are below 1% per year for sterilization and LARCs, about 4% for injectables, and about 7% for pills (WHO and Johns Hopkins, 2022). Because sterilization was rare in our data (fewer than 1% at endline), in the results section, we refer to this outcome as use of LARC or SARC for simplicity, where LARC includes implants, IUDs, and the small number of sterilizations.

[8] Emergency contraception is not classified as a modern method in this study because it is intended for occasional, post-coital use rather than routine pregnancy prevention.

[9] Of 4,167 midline respondents, 11 had their 6-month contraceptive use inferred from midline data. Conversely, 21 of 3,743 endline respondents had their 3-month use inferred from endline data. Results are robust to excluding these imputed cases.

Knowledge of LAM was a key outcome, measured at the 3-month mark using a three-item index ranging from 0 to 3. The first item assessed whether the respondent had ever heard of LAM. Among those who had, the second item evaluated knowledge of the recommended duration of use (up to 6 months postpartum), and the third captured awareness of the two additional conditions required for LAM to be effective: the absence of menstruation and exclusive breastfeeding. Participants unfamiliar with LAM automatically scored zero on the second and third items.

Among women who were using a method at follow-up, we also measured two user-reported outcomes related to contraceptive experience, as the intervention was designed to help women identify and select a method aligned with their preferences. These women were asked to rate their satisfaction with their current method using a 1–5 Likert scale, where 1 indicated "very unsatisfied" and 5 indicated "very satisfied," and to report whether they intended to continue using the method (binary indicator).

Although some of these measures were captured at both follow-up time points, we focus on results at endline, which corresponds to the final time point of data collection. This allows us to capture the most recent information on women's behaviors and attitudes during the postpartum period. LAM knowledge, however, is reported at midline because the method is only considered effective within the first 6 months postpartum and was not reassessed at endline.

2.4.4 User-Rated Quality of Message Flows

Finally, we assessed participants' perceptions of the quality of the counseling messages. At 6 months postpartum, participants were asked to rate the helpfulness of the messages using three questions: (1) how well the messages helped them learn about different methods, (2) how well they addressed concerns or questions about contraceptive methods, and (3) how well they supported method selection. Each question was rated from 0 ("not helpful at all") to 4 ("very helpful"), yielding a total score between 0 and 12. We used this outcome to evaluate how the intervention was received by users and whether it supported informed choice in the postpartum period.

2.5 Analytical Approach

We begin by presenting descriptive statistics on key demographic, socioeconomic, and behavioral characteristics for the full randomized sample, as well as for the analytic subsamples reached at 3 and 6 months postpartum. To test for balance across treatment arms, we compute differences between treatment and control groups using Pearson's Chi-squared tests

for categorical variables and Wilcoxon rank-sum tests for continuous variables (Diez et al., 2019). In addition, we conduct an omnibus test of joint orthogonality (Wald F) by regressing the treatment indicator on a large set of baseline covariates and computing a randomization-inference p-value under the actual assignment mechanism (Kerwin et al., 2024).

To estimate program impact, we calculate average treatment effects as risk differences between the treatment and control groups using ordinary least squares. Given the binary nature of most outcomes, we use a linear probability model, which allows for straightforward interpretation of marginal effects in percentage-point terms (Hellevik, 2009). All models include heteroskedasticity-robust standard errors (Wooldridge, 2010).

Our primary specification adjusts for the stratification variables used during randomization (age group and geographic location) to improve statistical precision and account for any residual imbalance (Kahan and Morris, 2012). The estimating equation is as follows:

$$Y_i = \alpha + \beta \cdot \text{Treatment}_i + \boldsymbol{\delta} \cdot \text{X}_i + \varepsilon_i \tag{4}$$

where Y_i is the outcome of interest for individual i, Treatment_i is an indicator for assignment to the treatment arm, X_i is a vector of controls for the randomization strata, and ε_i is the error term. The coefficient β captures the average treatment effect on the outcome.

The targeted sample size during study planning was 4,190 women, designed to provide 80% power to detect a minimum detectable effect of 4.25 percentage points, assuming a baseline uptake rate of 57% at 3 months postpartum based on prior evidence (Jones et al., 2020). The realized analytic sample at 3-month follow-up included 4,167 women, yielding a minimum detectable effect of approximately 4.31 percentage points.

In addition to estimating overall treatment effects, we conduct subgroup analyses to explore heterogeneity in treatment effects across dimensions where differential responsiveness is plausible. These include geographic location, baseline fertility intention, intention to use postpartum contraception, and distance to antenatal care facility.

2.6 Ethical Considerations

The study received ethical approval from several oversight bodies. In Kenya, the study was reviewed and approved by Institutional Ethics and Review Committees (IERCs) and was granted a research license by the National Commission for Science, Technology, and Innovation (NACOSTI). It was also approved by the Institutional Review Boards (IRBs) at the Harvard T. H. Chan School of Public Health and the Johns Hopkins Bloomberg School of Public Health, as well as the Ethical and Scientific Review Committee of Amref Health Africa (AMREF) in Nairobi. The trial was registered on ClinicalTrials.gov with the identifier

NCT06266780.

3 Results

3.1 Study Enrollment

Figure 2 summarizes participant recruitment and follow-up. Between February and April 2024, 17,466 women enrolled in PROMPTS were screened. Of these, 5,469 (31%) met the eligibility criteria: being 6 to 8.5 months pregnant, aged 15 to 49, possessing an SMS-capable phone, and providing informed consent. The most common reasons for ineligibility were being unreachable by phone or having already given birth. Among eligible women, 4,751 (87%) consented to participate and were randomized 1:1 to the treatment (n = 2,376) or control (n = 2,375) group.

Midline follow-up at approximately 3 months postpartum was completed by 4,167 women (88%), and endline follow-up at 6.5 months postpartum was completed by 3,743 women (79%).[10] Most attrition was due to repeated failed call attempts, switched-off phones, or call disconnections.

For the 3-month outcomes, we excluded 158 women who reported a stillbirth, miscarriage, or newborn death, and 13 women interviewed before 2.5 months postpartum. For the 6-month outcomes, we excluded eight women interviewed before 5.5 months postpartum and five who reported initiating family planning before delivery [11]. About 25% of endline interviews occurred between 5.5 and 6.0 months postpartum; of these, 99% were between 5.8 and 6.0 months, which we consider sufficiently close to 6 months.

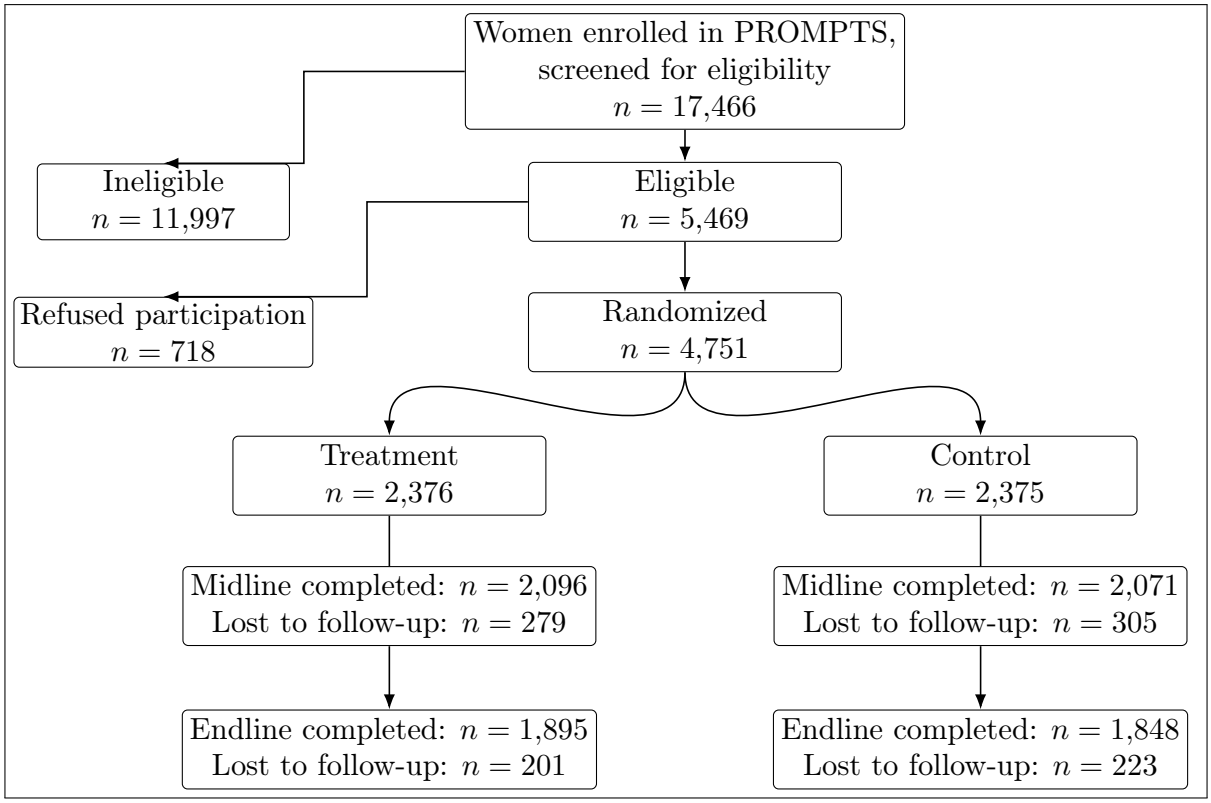
For each outcome, we excluded participants who refused to answer, were unsure, or responded "don't know"[12], except for knowledge-based outcomes (e.g., LAM knowledge), where "don't know" responses were coded as lack of knowledge.

[10] The average (SD) time to midline and endline interviews was 3.5 (0.8) months and 6.5 (0.7) months, respectively.

[11] Because postpartum family planning initiation is only possible after childbirth, we treat these five reports as erroneous initiation dates and exclude them.

[12] This was rare. For instance, fewer than 0.1% of participants responded "don't know" for the primary outcomes.

Figure 2. Flowchart of Participant Recruitment and Follow-up in the Study



Notes: This figure shows the flow of participants from recruitment to endline. Women were screened from the PROMPTS registry between February and April 2024. Eligibility required being 15 to 49 years old, 6 to 8.5 months pregnant, reachable by phone, and able to provide informed consent. Follow-up surveys were conducted by phone at approximately 3 and 6.5 months postpartum. Reasons for loss to follow-up included unanswered calls, disconnected lines, and phones being switched off.

3.2 Descriptive Statistics

3.2.1 Study Sample versus National Survey Subsample

Table 1 presents baseline characteristics of study participants alongside those of a subsample of pregnant women from the 2022 PMA survey in Kenya.[13]

The mean age of participants in our study was 26 years, nearly identical to the PMA subsample. A large majority of women were married (79%), and approximately 80% had completed at least primary education. Tertiary education was more common in our sample than in PMA (30% vs. 15%). Geographic distribution also differed: 35% of our sample resided in Central Kenya compared to 24% in PMA, while fewer resided in Coastal Kenya (7%

[13]We use PMA data because it is nationally representative with a focus on reproductive health and family planning, and because our instrument was adapted from the PMA questionnaire. The PMA sample shown here is restricted to women who were pregnant at the time of interview. Since pregnancy is not a primary sampling domain, this subgroup is relatively small.

vs. 18%). On average, women in our study had 1.78 living children at baseline. Roughly 29% reported not wanting additional children, comparable to the 27% in PMA. About one-third of pregnancies were reported as unintended (34% vs. 39% in PMA). Most women intended to use family planning after delivery (85%), slightly below the PMA estimate (87%). Among married women, 93% expected partner support for postpartum family planning (PPFP), compared with 90% in PMA. Prior FP use was also more common in our sample (63% vs. 48%). However, among women who planned to use contraception, nearly all PMA respondents reported having a specific method in mind (98%), compared with 69% in our study. By contrast, women in our study were more likely to report that they plan to initiate FP within six months postpartum (82% vs. 51%).

Two main insights emerge. First, the descriptive statistics indicate substantial demand for PPFP information and services. A notable share of pregnancies was unintended, nearly one-third of women did not want additional children, and the overwhelming majority reported plans to use contraception soon after delivery, often with partner support. These findings point to an opportunity to strengthen informed postpartum contraceptive decision-making.

Second, our study sample appears more socioeconomically advantaged than the nationally representative PMA sample. This difference has implications for external validity, which we discuss further in Section 4.

Table 1. Characteristics of the Baseline Study Sample vs. PMA Sample

Characteristic	Baseline N = 4,751	PMA Sample N = 484
Demographic and Socioeconomic Characteristics		
Age (years)	26.18 (5.78)	26.15 (5.98)
Aged 15–19 (adolescent)	9.2%	12%
Married	79%	73%
Cohabiting, unmarried	1.2%	11%
Highest education: Tertiary	30%	15%
Highest education: Secondary	49%	31%
Highest education: Primary	20%	46%
Highest education: None	0.8%	7.0%
Location: Western Kenya	43%	42%
Location: Central Kenya	35%	24%
Location: Eastern Kenya	15%	16%
Location: Coastal Kenya	6.9%	18%
Ever given birth (live or stillbirth)	57%	74%
Number of living children	1.78 (1.07)	–
FP Knowledge and Beliefs		
Aware of return to fertility postpartum	35%	–
Knowledge index: LAM	0.50 (0.76)	–
Husband supportive of PPFP	93%	90%
Behavioral and Psychological Factors		
Needs reminders to start tasks	13%	–
Difficulty planning ahead	20%	–
Difficulty following through	30%	–
Felt more strained than usual (past month)	31%	–
Access and Financial Constraints		
Travel time to ANC facility (min)	29.46 (23.00)	–
Obtaining 2,000 KSh for care: difficult	0.73 (0.44)	–
FP History and Intentions		
Current pregnancy was unplanned	34%	39%
Does not want more children	29%	27%
Wants to wait 2+ years before next pregnancy	97%	97%
Prior FP use	63%	48%
Last method used was modern	60%	–
Last FP source: public facility	34%	–
Last FP source: private facility	11%	–
Last FP source: pharmacy	18%	–
Intends to use PPFP	85%	87%
Plans to use a modern method postpartum	69%	98%
Plans to start method within 6 months postpartum	68%	–
Weeks to EDD	7.58 (3.31)	–

Abbreviations: PMA = Performance Monitoring for Action; FP = family planning; LAM = lactational amenorrhea method; PPFP = postpartum family planning; ANC = antenatal care; KSh = Kenyan shillings; EDD = expected delivery date.

Notes: This table summarizes characteristics of participants at baseline. Means and standard deviations (SD) are reported for continuous variables; frequencies and percentages are shown for categorical variables. Missing responses are excluded from variable-specific denominators. For comparison, the table also includes summary statistics from the 2022 Kenya round of the PMA survey for pregnant women. A dash ("–") indicates that a corresponding measure was not available in the PMA dataset.

3.2.2 Randomization Balance

Table 2 reports baseline characteristics overall and by treatment arm. Across most demographic, socioeconomic, and reproductive health measures, the two groups appear similar. Out of the full set of comparisons, only two variables differ at conventional significance levels: knowledge of the LAM ($p = 0.020$) and whether the respondent reported having a modern postpartum method in mind ($p = 0.013$). Given the large number of baseline characteristics examined, a small number of significant differences at conventional thresholds could occur by chance. An omnibus F-test of joint orthogonality yields a p-value of 0.2, indicating that we cannot reject the null of overall balance across arms. Nevertheless, to alleviate potential concerns with these two imbalances we include baseline LAM knowledge as a covariate in our regression specifications and verify that the estimated treatment effects are robust to its inclusion or exclusion and, in the heterogeneity analyses, compare treatment effects by baseline intention to initiate PPFP.

Follow-up samples (Tables A1 and A2) show similar distributions across arms and closely resemble the baseline composition, reducing concerns about differential attrition.

Table 2. Baseline Summary Statistics

Characteristic	Overall N = 4,751	Control N = 2,375	Treatment N = 2,376	p-value
Demographic and Socioeconomic Characteristics				
Age (years)	26.18 (5.78)	26.15 (5.79)	26.20 (5.77)	0.7
Aged 15–19 (adolescent)	9.2%	9.2%	9.2%	>0.9
Married	79%	78%	79%	0.4
Cohabiting, unmarried	1.2%	1.1%	1.4%	0.3
Highest education: Tertiary	30%	30%	30%	0.7
Highest education: Secondary	49%	49%	49%	>0.9
Highest education: Primary	20%	20%	19%	0.5
Highest education: None	0.8%	0.8%	0.9%	0.5
Location: Western Kenya	43%	43%	43%	>0.9
Location: Central Kenya	35%	35%	35%	>0.9
Location: Eastern Kenya	15%	15%	15%	>0.9
Location: Coastal Kenya	6.9%	6.9%	6.9%	>0.9
Ever given birth (live or stillbirth)	57%	57%	58%	0.3
Number of living children	1.78 (1.07)	1.81 (1.11)	1.75 (1.03)	0.2
FP Knowledge and Beliefs				
Aware of return to fertility postpartum	35%	35%	36%	0.3
Knowledge index: LAM	0.50 (0.76)	0.48 (0.74)	0.53 (0.77)	0.020
Husband supportive of PPFP	93%	93%	94%	0.4
Behavioral and Psychological Factors				
Needs reminders to start tasks	13%	13%	12%	0.6
Difficulty planning ahead	20%	19%	21%	0.10
Difficulty following through	30%	29%	30%	0.7
Felt more strained than usual (past month)	31%	31%	30%	0.8
Access and Financial Constraints				
Travel time to ANC facility (min)	29.46 (23.00)	29.12 (22.71)	29.80 (23.28)	0.4
Obtaining 2,000 KSh for care: difficult	0.73 (0.44)	0.73 (0.44)	0.73 (0.45)	0.5
FP History and Intentions				
Current pregnancy was unplanned	34%	34%	33%	0.8
Does not want more children	29%	28%	29%	0.4
Wants to wait 2+ years before next pregnancy	97%	97%	97%	0.8
Prior FP use	63%	64%	63%	>0.9
Last method used was modern	60%	60%	60%	>0.9
Last FP source: public facility	34%	34%	35%	0.4
Last FP source: private facility	11%	11%	11%	0.3
Last FP source: pharmacy	18%	19%	18%	0.2
Intends to use PPFP	85%	85%	85%	0.8
Plans to use a modern method postpartum	69%	68%	71%	0.013
Plans to start method within 6 months postpartum	68%	68%	67%	0.4
Weeks to EDD	7.58 (3.31)	7.55 (3.29)	7.62 (3.33)	0.5
Test of joint orthogonality, p-value				0.2

Abbreviations: PMA = Performance Monitoring for Action; FP = family planning; LAM = lactational amenorrhea method; PPFP = postpartum family planning; ANC = antenatal care; KSh = Kenyan shillings; EDD = expected delivery date.

Notes: This table presents baseline characteristics of participants, overall and stratified by treatment assignment. Means and standard deviations (SD) are shown for continuous variables; frequencies and percentages for categorical variables. P-values are from chi-square tests for categorical variables and Wilcoxon rank-sum tests for continuous variables, testing for differences between treatment and control groups. The joint F test p-value, based on randomization inference, is reported as an overall assessment of baseline covariate balance. Missing values are excluded from variable-specific denominators. Randomization was stratified by age group and geographic location.

3.3 Descriptive Statistics at Follow-up

Tables A3 and A4 present descriptive statistics on pregnancy outcomes, health system contacts, family planning counseling coverage, and exposure to the intervention at midline and endline. At midline, 96% of enrolled women had delivered and had a living infant, 2.5% had experienced infant loss after delivery, and 1.3% had lost a baby during pregnancy.[14]

While only 1% of women reported using the LAM at midline, 36% met all behavioral criteria for effective use: exclusive breastfeeding, no return of menstruation, and infant under six months of age with no other liquids or foods introduced. The gap between passive and reported use suggests that many women may have practiced LAM unknowingly, highlighting broader gaps in knowledge and labeling. For comparability with national surveys such as PMA, we use self-reported LAM in the main analysis. Nonetheless, the discrepancy underscores the need to interpret early postpartum contraceptive uptake measures with caution.

Contact with the healthcare system during the peripartum period was widespread, but family planning counseling coverage was incomplete and fell short of global and national guidelines. The World Health Organization recommends integrating counseling into all maternal and newborn health contacts, including antenatal care, delivery, postpartum checkups, and child immunization visits (World Health Organization, 2013). Kenya's national guidelines echo this recommendation (Kenya Ministry of Health, 2018).

At midline, 59% of women reported discussing family planning during antenatal care, 55% during delivery care, and 65% during a child immunization visit. 60% reported having any postpartum check since delivery, with an average of 1.3 visits by midline. Among those who attended a postpartum checkup, 71% reported receiving family planning counseling.

At endline, 53% reported any postpartum visit between midline and endline, with an average of 1.0 visit. Among those who had a visit, 77% reported receiving family planning counseling. Counseling during immunization visits declined to 56%, compared to 65% at midline. While 92% of women reported discussing family planning at least once across the four recommended contact points (antenatal care, delivery, postpartum checkup, immunization), only 11% received counseling at all four. These figures suggest that while most women received counseling at least once, few were exposed to the repeated reinforcement recommended by guidelines. This inconsistency may limit informed method choice and uptake, particularly for long-acting methods that require provider engagement.

Exposure to the PROMPTS message flows was high. At endline, 98% of women reported still receiving PROMPTS messages. Of these, 81% reported always reading the messages and an additional 14% reported reading them often. The high rate of message exposure and

[14] At the 3-month interview, no women reported a new pregnancy. By six months postpartum, only 11 women (0.3%) reported becoming pregnant again.

readership suggests that SMS-based counseling tools such as PROMPTS can complement in-person services and help mitigate missed opportunities for family planning counseling.

3.4 User Engagement with Treatment Group Messages

Before turning to the main treatment effects, we summarize engagement with the intervention messages among women assigned to the treatment arm.

3.4.1 Initial Engagement During Pregnancy

Table A5 reports engagement with the initial informational messages sent at approximately 7.5 months gestation. Of the 2,376 women in the treatment group, 463 (20%) responded to the introductory prompt about PPFP. Among those who engaged, information requests most often concerned the copper IUD (35%), followed by the lactational amenorrhea method (LAM, 17%) and the Depo-Provera injection (17%). Smaller shares sought information on the implant (16%), rhythm beads (11%), the hormonal IUD (11%), the Combined hormonal pill (10%), the progestin-only pill (6.5%), and condoms (4.8%). Respondents who indicated interest in one or more methods received tailored informational messages on their selected options.

3.4.2 Engagement with the shared decision-making Counseling Flow

Table A6 summarizes engagement with the shared decision-making counseling flow, delivered at approximately eight months gestation. Of the 2,123 women who received an invitation, 422 (20%) responded by selecting their most valued contraceptive attributes. The most frequently chosen attributes were safety while breastfeeding (35%), the ability to discontinue the method to conceive in the future (30%), and high effectiveness (27%). Based on these preferences, 322 women (15% of those invited) received tailored method suggestions[15]. The most commonly recommended methods were the implant (27%), injectable (22%), and progestin-only pill (17%). A total of 135 women (6% of those invited) ultimately selected a preferred method to discuss with a provider, most often the implant (36%) or injectable (20%).

3.4.3 Postpartum Message Engagement

Table A7 reports engagement with postpartum message flows. At 21 days postpartum, 224 participants in the treatment group (11%) responded to a message inviting them to learn

[15]A small share of respondents entered attribute information in free-text formats the algorithm did not anticipate, so their responses could not be parsed to trigger tailored suggestions.

more about specific topics. Among these, 79 (35%) selected family planning methods, while others sought information about resuming sex (23%), method timing (19%), and safety (14%).

At 36 days postpartum, 106 women (6.2%) requested additional information about contraceptive methods. The most frequently selected methods among these women were injectables (28%) and implants (20%), followed by the copper IUD (11%), LAM (9.4%), combined hormonal pills (10%), and progestin-only pills (5.7%).

At 45 days postpartum, 956 women (40% of the treatment group) responded to a message asking about their contraceptive use status. Among respondents, 370 (39%) reported current use of a modern method. Among non-users, 516 (23%) provided a reason for non-use, most often a desire for more information before deciding (44%), exclusive breastfeeding (22%), or concerns about side effects (20%).

At 2.5 months postpartum, 931 women (39%) responded to follow-up messages assessing LAM eligibility. 309 of these participants (33%) reported considering the introduction of food or liquids to their baby, and among those not introducing food, 226 (41%) reported the return of menstruation. These patterns suggest that many women had transitioned out of the effective window for LAM by this stage, underscoring the importance of timely counseling and support for method transition during the postpartum period.

Engagement thus varied across components of the intervention and over time. Interaction with the shared decision-making flow was limited, and the initial pregnancy nudge drew modest participation. By contrast, postpartum touchpoints attracted more consistent engagement, particularly the LAM-focused messages. Overall, participation concentrated around brief, time-aligned postpartum messages, whereas the multi-step interactive counseling features reached a smaller share of participants.

3.5 Treatment Effects

3.5.1 Primary Outcomes

Table A8 presents the contraceptive method mix prior to pregnancy and at follow-up. Short-acting reversible contraceptives (SARCs, primarily injectables and pills) were the most commonly used method type, reported by 29% of women at 3 months postpartum and 30% at 6 months. Use of long-acting reversible contraceptives (LARCs) increased from 16% at midline to 23% at endline, indicating a gradual shift toward longer-term options over time. LAM use remained rare at both points, consistent with earlier descriptive evidence on discrepancies between passive and reported practice.

Figure 3 displays the estimated average treatment effects for the two primary outcomes:

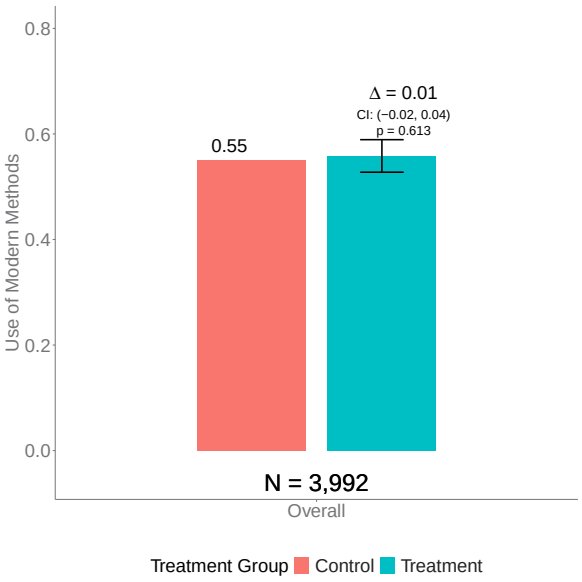
self-reported use of a modern method at 3 and 6 months postpartum. In the control group, 55% of participants reported modern method use by 3 months, rising to 69% by 6 months postpartum.

The intervention had no detectable effect on modern contraceptive uptake at either time point. At 3 months postpartum, the estimated treatment effect was 1 percentage point (95% CI: −2 to 4). At 6 months, the estimated effect was 0 percentage points (95% CI: −3 to 3). These null results are precise: we can rule out increases in uptake larger than 7.2% at midline and 4.3% at endline.

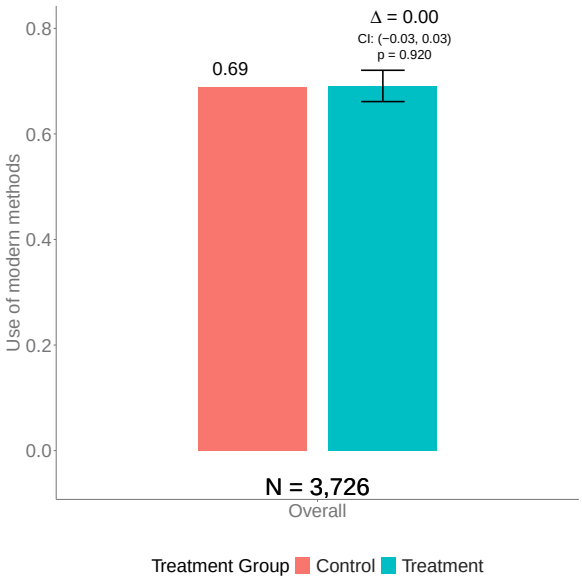
These findings indicate that enhanced counseling content did not increase contraceptive uptake beyond the already high levels achieved by the standard PROMPTS platform. We explore potential mechanisms behind these null results in Section 3.7.

Figure 3. Primary outcomes

(a) Use of Modern PPFP at 3 Months



(b) Use of Modern PPFP at 6 Months



Notes: This figure shows average treatment effects on self-reported postpartum family planning (PPFP) use at 3 months (left) and 6 months (right) postpartum. Bars show the estimated mean outcome in the control group (red bar) and the control group mean plus the estimated treatment effect (blue bar). The treatment effect is represented by the difference between the two bars. Modern methods include sterilization, implants, IUDs, injectables, pills, condoms, diaphragms/cervical caps, spermicides, and the lactational amenorrhea method (LAM). LAM is classified as modern only at 3 months postpartum. Women who experienced pregnancy or infant loss, were interviewed too early (<2.5 months at midline; <5.5 months at endline), reported initiating family planning before their actual delivery date, or had missing or "unsure" responses were excluded from the outcome-specific analyses. Effects were estimated using ordinary least squares with robust standard errors, adjusting for stratification variables (age group and geographic location).

3.5.2 Secondary Outcomes

Figure 4 summarizes the estimated treatment effects for the four main secondary outcomes.

First, the control group scored an average of 0.55 out of 3 on the LAM knowledge index, indicating limited baseline understanding. The intervention produced a statistically significant improvement of 0.20 points (95% CI: 0.15 to 0.24), corresponding to a 36% increase relative to the control mean. This effect was driven primarily by greater awareness among treatment participants: they were more likely to have heard of LAM (treatment effect: 0.12; 95% CI: 0.09 to 0.15) and to correctly identify that LAM is effective only up to six months postpartum (treatment effect: 0.10; 95% CI: 0.07 to 0.12).

Second, use of most- or moderately-effective methods at six months was 68% in the control group. The estimated treatment effect was 0 percentage points (95% CI: −3, 3), not statistically significant. Appendix Figure B2 shows a small, offsetting pattern, with higher LARC and lower SARC in the treatment arm, consistent with substitution rather than a net increase in overall use. This substitution is desirable to the extent that it reflects movement toward women's more preferred methods.

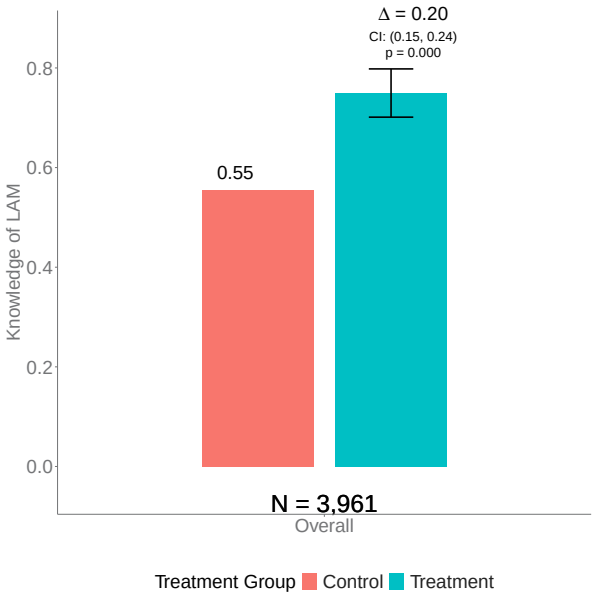
Third, method satisfaction at six months was high in the control group (mean: 4.53 out of 5). This aligns with the fact that 87% of family planning users in the control group reported using their preferred method at endline. Consistent with this high baseline alignment, the intervention produced a small, statistically insignificant change in concordance between preferred and actual method at six months (treatment effect: 0.02; 95% CI: −0.01 to 0.04; $p = 0.217$), as shown in Appendix Figure B3. The effect on satisfaction was similarly modest and not statistically significant (treatment effect: 0.06 points; 95% CI: −0.02 to 0.14).

Finally, intention to continue family planning at six months was 80% in the control group. The intervention increased this outcome by 3 percentage points (95% CI: 0.0 to 6), representing a 4% improvement relative to the control mean.

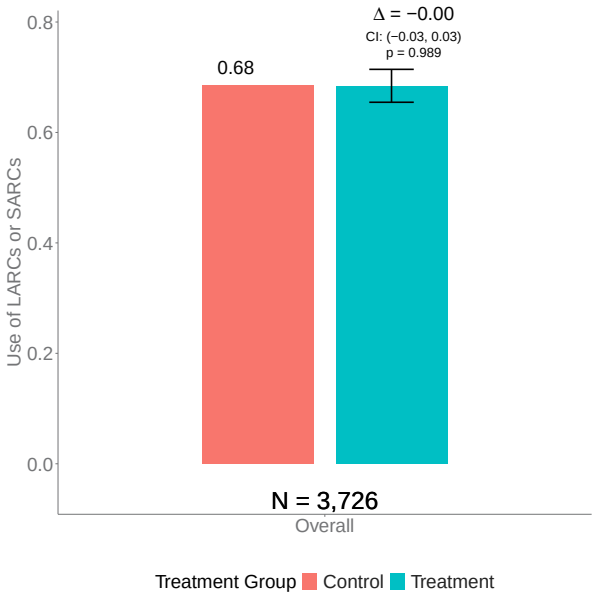
These results suggest that the intervention strengthened knowledge of LAM and modestly improved intentions to continue family planning, but had little effect on method satisfaction or uptake of most effective or moderately effective methods.

Figure 4. Secondary outcomes

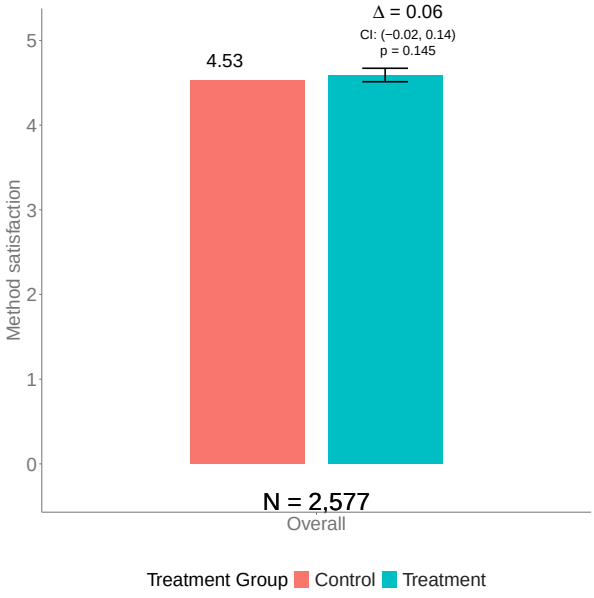
(a) Knowledge of LAM at 3 Months



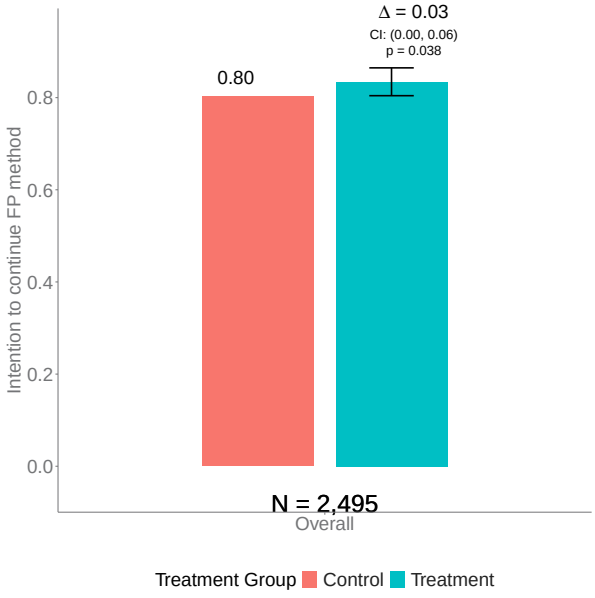
(b) Use of LARC or SARC Methods at 6 Months



(c) Method Satisfaction at 6 Months



(d) Intention to Continue FP at 6 Months



Notes: This figure presents average treatment effects on four secondary outcomes: knowledge of the lactational amenorrhea method (LAM); use of long-acting reversible contraceptives (LARCs) or short-acting reversible contraceptives (SARCs); satisfaction with the adopted method; and intention to continue family planning. Bars show the mean outcome in the control group (red bar) and the control group mean plus the estimated treatment effect (blue bar). The difference between the bars represents the treatment effect. LAM knowledge was measured using a three-item index based on knowledge of the three criteria required for effective LAM use. Women were coded as knowing LAM only if they correctly identified all three criteria. "Don't know" and "unsure" responses were coded as not knowing. Satisfaction and intention outcomes were measured only among women who reported using a family planning method at the time of the survey. Satisfaction was assessed using a Likert scale from 1 ("very unsatisfied") to 5 ("very satisfied") and modeled as a continuous variable. Intention was coded as 1 if the respondent indicated that she intended to continue using family planning and 0 if not. LAM knowledge was assessed at 3 months postpartum; the remaining outcomes were measured at 6 months. Women who experienced pregnancy or infant loss, were interviewed too early (before 2.5 months at midline or before 5.5 months at endline), reported initiating family planning before their actual delivery date, or had missing responses were excluded from outcome-specific analyses. Estimates were obtained using ordinary least squares with robust standard errors, adjusting for age group and geographic location (stratification variables). For the LAM knowledge outcome, we additionally controlled for baseline LAM knowledge due to observed imbalances across groups.

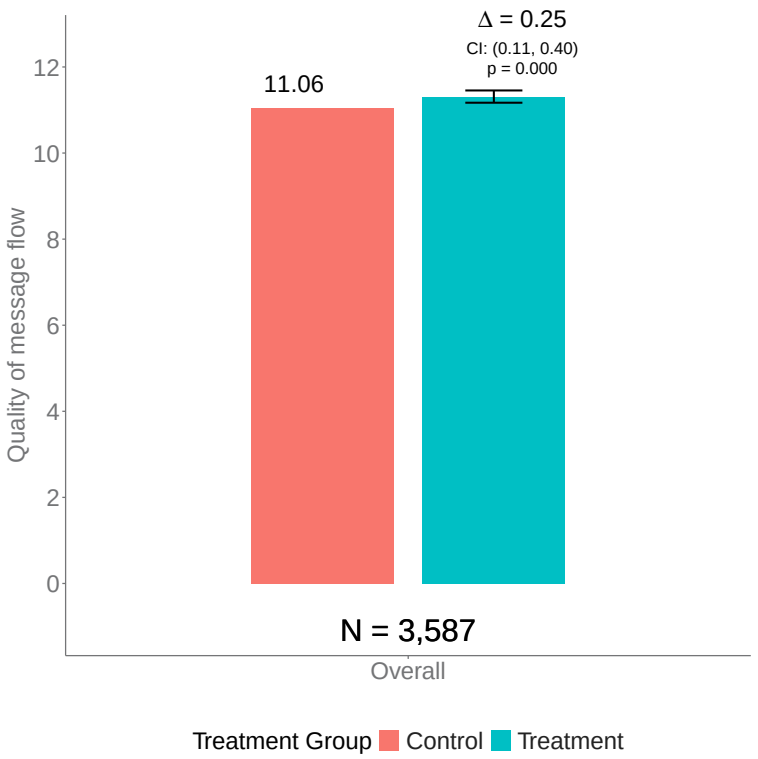
3.5.3 Quality Outcome

Figure 5 reports treatment effects on the overall quality rating of the message flows. Participants rated the messages very highly: in the control group, the mean rating was 14.06 out of 15. Women in the treatment group rated the messages slightly more favorably, with a statistically significant treatment effect of 0.25 points (95% CI: 0.11 to 0.40), representing a 2% improvement relative to the control mean.

Analysis of the three sub-items, shown in Appendix Figures B4a–B4c, suggests that the overall effect was mainly driven by higher ratings in the intervention group on two dimensions: usefulness for learning about contraceptive methods (treatment effect: 0.08; 95% CI: 0.03 to 0.13) and usefulness for choosing a method (treatment effect: 0.12; 95% CI: 0.06 to 0.18). Differences in ratings for the third item, usefulness for addressing family planning concerns, were smaller and not statistically significant (treatment effect: 0.05; 95% CI: −0.00 to 0.11).

Overall, these findings indicate that women in both study arms perceived the message flows as high quality, and that the enhanced counseling content modestly improved perceptions of their usefulness for learning and informed method choice.

Figure 5. User-rated Quality



Notes: This figure shows average treatment effects on user-rated quality of the PROMPTS counseling messages, measured at 6 months postpartum. Bars show the estimated mean outcome in the control group (red bar) and the control group mean plus the estimated treatment effect (blue bar). The treatment effect is represented by the difference between the two bars. The outcome is based on a three-item index (range: 0–12) capturing how helpful the messages were in (1) educating about family planning methods, (2) addressing concerns, and (3) supporting method selection. Each item was rated on a scale from 0 to 4, where 0 indicated "not helpful at all" and 0 indicated "very helpful." The sample is restricted to women who confirmed receiving PROMPTS messages. Estimates were obtained using ordinary least squares with robust standard errors, controlling for age group and geographic location (stratification variables). Women who were interviewed before 5.5 months postpartum, reported initiating family planning before their actual delivery date, or had missing responses were excluded.

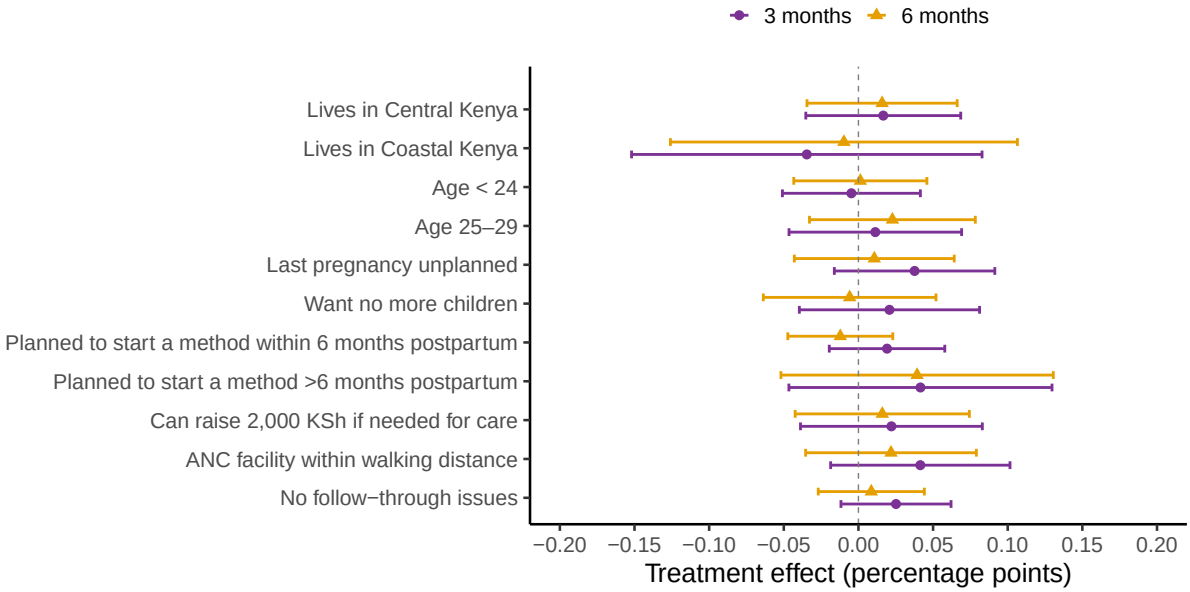
3.6 Treatment Effect Heterogeneity

Average effects may mask subgroup differences. We estimate treatment effects on modern method use at 3 and 6 months for baseline subgroups defined by geography (Central and Coastal Kenya), age (<24, 25–29), fertility preferences and intentions (do not want more children; planned to start a family planning method within 6 months postpartum; planned to start a method after 6 months), baseline financial resources (can raise 2,000 KSh, roughly $15, for care), proximity to services (antenatal facility within walking distance), and follow-through constraints (baseline report of difficulty acting on one's plans). Figure 6 reports point estimates and 95% confidence intervals for each subgroup and outcome.

Across subgroups, we do not find evidence of differential treatment effects. In most strata, confidence intervals are tight enough to rule out large positive impacts, implying any true

effects are practically insignificant. For a few strata, precision is lower and moderate effects cannot be excluded. Overall, these results are consistent with the main finding that the intervention did not increase postpartum modern method use in this study population.

Figure 6. Treatment effects on modern method use at 3 and 6 months across selected subgroups



Notes: This figure shows average treatment effects on self-reported postpartum family planning use at 3 months and 6 months postpartum for each subgroup of women characterized in the y-axis. Effects were estimated using linear regressions adjusting for stratification variables (age group and geographic location) where appropriate. Points are risk differences (percentage points); horizontal lines show 95% confidence intervals.

3.7 Mechanisms

We next examine potential explanations for the null average treatment effects on modern contraceptive uptake at 3 and 6 months postpartum. We focus on two areas: patterns of user engagement with the intervention and self-reported reasons for non-use of family planning or preferred methods.

We next examine potential explanations for the null average treatment effects on modern contraceptive uptake at 3 and 6 months postpartum. We focus on two areas: patterns of user engagement with the intervention and self-reported reasons for non-use of family planning or preferred methods.

3.7.1 User Engagement

As noted in Section 3.4, engagement was uneven across components and over time. Multi-step interactive counseling, such as the shared decision-making (SDM) flow, drew limited participation, whereas brief, time-aligned postpartum messages attracted more consistent engagement, particularly the LAM-focused prompts at 2.5 months. Appendix Table A9 shows that among those who did engage with the SDM flow, some outcomes were more favorable: at 3 months postpartum, 60% of SDM users reported modern method use compared to 51% of non-users ($p = 0.004$) and knowledge of LAM was higher among SDM participants at 3 months (0.84 vs. 0.74; $p = 0.037$). These differences are not necessarily causal given voluntary and selective engagement, but they indicate value when the content was used.

Behavioral constraints likely contributed to these patterns. At baseline, 30% of women reported difficulty following through on tasks and 31% reported feeling more strained than usual, with similar reports at follow-up. In such conditions, low-friction, well-timed prompts are more likely to elicit quick responses, while multi-step interactive tools require bandwidth that may not be available consistently. Nudges and reminders were designed to align with routine antenatal, postnatal, and immunization visits, but some messages may have been missed when women were overloaded or preoccupied.

3.7.2 Reasons for Non-Use

We next examine self-reported reasons for not using any contraceptive method (Table 3), and separately, for not using a preferred method (Table 4). These questions were restricted to women who either did not use any method or were using a method that did not match their stated preference at midline or endline. Respondents could select multiple reasons, so categories are not mutually exclusive and percentages do not sum to 100.

Among women not using any method either at midline or endline, 1,206 (72%) cited at least one demand-side reason. The most common was fertility preferences (e.g., wanting another child soon or not wanting to use contraception), with 49%; followed by fears of side effects (e.g., concerns about bleeding or infertility), at 18%; and misinformation or lack of knowledge (e.g., uncertainty about return to fertility or how to use methods), at 13%. Clinical ineligibility was 8% and planning or time constraints 1%. An additional 15% reported that family planning was irrelevant at the time (e.g., not sexually active, awaiting return of menses). Treatment–control differences across these categories were negligible. Only 2.8% of non-users cited social opposition (e.g., partner disapproval), consistent with high reported partner support in family planning decisions at baseline (93%).

On the demand side, partner engagement is often highlighted in the literature as an

important predictor of contraceptive use (Ashraf et al., 2014; El-Khoury et al., 2016; Link, 2011). In many settings, men play a central role in family planning decision-making, and some interventions suggest that involving male partners can increase uptake. Yet the evidence is mixed: for example, Harrington et al. (2019) found no significant effect of optional male involvement in the Mobile WACh XY intervention, and Karra et al. (2021) showed that partner presence during counseling did not improve concordance between women's preferences and contraceptive behavior. Our findings are consistent with this latter body of work: fewer than 3% of women cited social opposition as a reason for non-use, suggesting that male partner opposition is not a major barrier in this context. Instead, fertility preferences, misinformation, and concerns about side effects remain central. The intervention was designed to address misinformation and concerns about side effects, but limited engagement likely constrained its effectiveness. These concerns may also be sufficiently entrenched that brief SMS information does not substantially alleviate them. Fertility preferences, by contrast, were not a target of the intervention and therefore represent a structural source of non-use beyond its scope.

Supply-side reasons were uncommon overall (6.0%), consistent with evidence that such barriers are often overstated as primary drivers of low uptake (Dupas et al., 2025; Miller et al., 2025). That said, they were more frequent in the treatment group (7.1% vs. 4.9%, $p = 0.058$), largely due to method availability or access (4.8% vs. 2.9%, $p = 0.048$). This pattern suggests that prompted demand encountered stock-outs or access frictions, which attenuated treatment effects.

3.7.3 Preferred Method Mismatch

A core aim of the intervention was to improve concordance between contraceptive use and women's stated preferences. Among women who reported a reason for not using their preferred method at either midline or endline, supply-side barriers were dominant: 432 women (67%) cited at least one supply-side reason, most often provider unavailability or denial (36%) and access issues (31%). Demand-side explanations were less common, with 156 women (24%) citing clinical ineligibility and fewer than 6% citing fears or social opposition. These patterns are consistent with provider surveys in Kenya and similar contexts that document restrictions based on age, parity, or marital status (Wagner et al., 2025; Schwandt et al., 2017; Tumlinson et al., 2015). Treatment–control differences were negligible.

Taken together, these findings suggest that the null effects on contraceptive uptake stem from a combination of limited engagement, intrinsic preferences against use, and supply-side barriers beyond the intervention's scope. At the same time, improvements in knowledge, intentions, and perceived quality highlight the potential for digital counseling tools to support

PPFP when engagement is higher or when structural barriers are less binding.

Table 3. Reasons for lack of uptake of any method

Characteristic	Overall N = 1,668	Control N = 854	Treatment N = 814	p-value
Demand-side reasons for lack of contraceptive use				
Any demand-side reason	1,206 / 1,668 (72%)	614 / 854 (72%)	592 / 814 (73%)	0.7
Social opposition	46 / 1,668 (2.8%)	23 / 854 (2.7%)	23 / 814 (2.8%)	0.9
Knowledge/misperceptions	217 / 1,668 (13%)	105 / 854 (12%)	112 / 814 (14%)	0.4
Fears of side effects/infertility/breastfeeding	296 / 1,668 (18%)	146 / 854 (17%)	150 / 814 (18%)	0.5
Preferences & fertility intentions	824 / 1,668 (49%)	428 / 854 (50%)	396 / 814 (49%)	0.5
Planning/time constraints	20 / 1,668 (1.2%)	10 / 854 (1.2%)	10 / 814 (1.2%)	>0.9
Clinical/health ineligibility	131 / 1,668 (7.9%)	67 / 854 (7.8%)	64 / 814 (7.9%)	>0.9
FP irrelevant	255 / 1,668 (15%)	143 / 854 (17%)	112 / 814 (14%)	0.090
Supply-side reasons for lack of contraceptive use				
Any supply-side reason	100 / 1,668 (6.0%)	42 / 854 (4.9%)	58 / 814 (7.1%)	0.058
Supply: method access/availability	64 / 1,668 (3.8%)	25 / 854 (2.9%)	39 / 814 (4.8%)	0.048
Supply: provider availability/denial	9 / 1,668 (0.5%)	3 / 854 (0.4%)	6 / 814 (0.7%)	0.3
Supply: financial cost/affordability	29 / 1,668 (1.7%)	14 / 854 (1.6%)	15 / 814 (1.8%)	0.8

Notes: Questions in this table were restricted to women who either did not use any contraceptive method or were using a method that did not match their stated preference at midline or endline. Respondents could select multiple reasons, so percentages do not sum to 100.
Demand-side reasons include: (i) social opposition (partner, family, or religious disapproval); (ii) knowledge/misperceptions (doubts about effectiveness, not knowing how to use methods, or being undecided about which method to use); (iii) fears (side effects, infertility, breastfeeding concerns); (iv) preferences and fertility intentions (not wanting to use contraception or wanting another child); (v) planning/time constraints (lack of time to seek services); (vi) clinical/health ineligibility (medical conditions or recovery following a C-section).
Supply-side reasons include: (i) method access/availability (stock-outs or unavailable methods); (ii) provider availability/denial (absent or refusing services); (iii) financial cost/affordability (methods considered too expensive).
Reported p-values compare proportions between treatment and control arms using two-sided tests.

Table 4. Reasons for lack of uptake of a preferred method

Characteristic	Overall N = 641	Control N = 323	Treatment N = 318	p-value
Demand-side reasons for not using preferred method				
Any demand-side reason	207 / 641 (32%)	105 / 323 (33%)	102 / 318 (32%)	>0.9
Social opposition	22 / 641 (3.4%)	14 / 323 (4.3%)	8 / 318 (2.5%)	0.2
Clinical/health ineligibility	156 / 641 (24%)	78 / 323 (24%)	78 / 318 (25%)	>0.9
Fears of side effects/infertility	34 / 641 (5.3%)	18 / 323 (5.6%)	16 / 318 (5.0%)	0.8
Supply-side reasons for not using preferred method				
Any supply-side reason	432 / 641 (67%)	220 / 323 (68%)	212 / 318 (67%)	0.7
Supply: method access/availability	199 / 641 (31%)	96 / 323 (30%)	103 / 318 (32%)	0.5
Supply: provider availability/denial	232 / 641 (36%)	122 / 323 (38%)	110 / 318 (35%)	0.4
Supply: financial cost/affordability	29 / 641 (4.5%)	16 / 323 (5.0%)	13 / 318 (4.1%)	0.6

Notes: Sample restricted to women who reported a reason for not using their *preferred* method at either midline or endline. Respondents could select multiple reasons, so percentages do not sum to 100.

Demand-side reasons include: (i) social opposition (partner, family, or religious disapproval); (ii) knowledge/misperceptions (doubts about effectiveness, not knowing how to use methods, or being undecided about which method to use); (iii) fears (side effects, infertility, breastfeeding concerns); (iv) preferences and fertility intentions (not wanting to use contraception or wanting another child); (v) planning/time constraints (lack of time to seek services); (vi) clinical/health ineligibility (medical conditions or recovery following a C-section).
Supply-side reasons include: (i) method access/availability (stock-outs or unavailable methods); (ii) provider availability/denial (absent or refusing services); (iii) financial cost/affordability (methods considered too expensive).
Reported p-values compare proportions between treatment and control arms using two-sided tests.

4 Discussion

This study evaluated the impact of a digital, personalized counseling intervention delivered via SMS text messages on postpartum family planning in Kenya. The intervention improved knowledge of the lactational amenorrhea method (LAM), intention to continue family planning, and perceptions of counseling quality but did not increase modern contraceptive use at three or six months postpartum, the trial's primary outcomes.

Analysis of mechanisms highlights two explanations for the null results. First, user engagement with the enhanced counseling content was limited: only 20% of women interacted with the shared decision-making tool, and 6% completed the full counseling flow. This low uptake is consistent with prior evidence that digital health interventions often face participation challenges due to message fatigue, cognitive overload, and competing demands (LeFevre et al., 2017; Aung et al., 2020). Second, among women not using any method, nearly half reported no desire to avoid pregnancy, indicating that fertility preferences were an important determinant of non-use. Other demand-side barriers, including fears of side effects, misinformation, and concerns related to breastfeeding, were also common. Although these issues were targeted by the intervention, limited interaction likely constrained effectiveness. Supply-side barriers were reported slightly more often by treatment participants but remained infrequent overall.

Among the subset of women who engaged with the shared decision-making tool, contraceptive uptake and knowledge outcomes were significantly better, suggesting that the content was effective when used. This pattern indicates that low engagement, rather than lack of content relevance, limited the intervention's impact.

These findings align with previous studies that show limited or no effect of digital counseling tools on contraceptive uptake, despite improvements in knowledge and user experience (Dehlendorf et al., 2019; Johnson et al., 2017). For example, Athey et al. (2023) report large effects on long-acting reversible contraceptive (LARC) uptake from a shared decision-making intervention in Cameroon. Unlike that study, which was facility-based and delivered by trained providers, the current trial tested a fully remote, text-based intervention at national scale. In addition, the intervention emphasized method choice aligned with women's stated preferences rather than promoting specific methods such as LARCs. Exploratory analyses suggested positive effects on LARC uptake in Central Kenya, but such increases are meaningful only insofar as they reflect informed, voluntary choices.

Although we do not observe increases in modern method use, the secondary outcomes align with the engagement pattern. Brief, time-aligned postpartum messages, especially those focused on LAM, attracted more participation and can plausibly shift knowledge and

intentions without sustained interaction. Clarifying LAM criteria and transition timing through concise prompts improved understanding, and personalized framing enhanced the perceived value of the message flows. These light-touch gains could persist or translate into later behavior if reinforced at clinical touchpoints or through follow-on counseling.

The intervention was also inexpensive. The marginal cost of the enhanced counseling content relative to the base PROMPTS package was approximately $0.74 per participant, indicating potential for cost-effective delivery if paired with strategies to increase engagement.

Several limitations merit consideration. First, the timing of messages was anchored to estimated delivery dates collected at enrollment. Although actual delivery dates were later incorporated into survey timing, some messages may have been received too early or too late to be salient. Second, outcomes were self-reported and may be subject to recall bias or social desirability, particularly for sensitive measures such as contraceptive use. Third, participants were women who opted into the PROMPTS platform and the study and therefore differed from a nationally representative cohort. Compared with women in national survey data, participants were more educated and more likely to have prior family planning experience, suggesting higher baseline awareness and narrower informational gaps. In more disadvantaged populations, effects may differ depending on the relative importance of knowledge versus access barriers. Fourth, all participants received the standard PROMPTS package, which has previously been shown to increase postpartum contraceptive use (Jones et al., 2020). Uptake in the control group reached 69% at six months postpartum, substantially higher than the national average of 50% (Track20 Project, 2024), so remaining scope for further gains was limited. As the mechanisms analysis indicates, much of the residual non-use reflects fertility preferences and low desire to use family planning, which are inherently harder to shift with light-touch digital counseling. Finally, follow-up ended at 6.5 months postpartum. Although this captures the period when contraceptive initiation is most clinically relevant, it does not allow assessment of longer-term outcomes, which may be influenced by the observed improvements in knowledge, intentions, and perceptions of counseling quality.

5 Conclusion

This study finds that a remote, personalized digital counseling intervention delivered via text messages improved knowledge of the lactational amenorrhea method, increased intention to use family planning, and enhanced perceived quality of counseling, but did not increase postpartum contraceptive uptake at the population level. These findings underscore both

the promise and the limitations of digital counseling for postpartum family planning.

A central takeaway is that making a remote digital counseling tool available is not sufficient to shift behavior at scale. Limited engagement is a key barrier. In addition, fertility intentions and preferences account for a substantial share of residual non-use, and supply-side access barriers, while less common, can still impede initiation among motivated users. Future research should examine how message flow features (content and timing) can be optimized to maximize engagement. In parallel, models that connect remote counseling with in-person support from healthcare providers are needed. This is especially important given evidence that access constraints can prevent users from obtaining their preferred method.

Future studies should also assess the persistence of effects over time, as contraceptive needs evolve beyond the mid-postpartum period. It is important to recognize, however, that a key finding from this study and from recent literature is that high desired fertility remains a major reason for non-use of contraception (Dupas et al., 2025). Digital interventions can help reduce informational, behavioral, or access-related barriers, but they are unlikely to alter fertility preferences, especially in contexts where contraceptive uptake is already high at baseline. Thus, even with improvements in design and delivery, the scope of digital counseling tools may remain limited to addressing second-order barriers such as misinformation, uncertainty, or provider interaction quality, rather than structural or deeply held demand-side factors like fertility preferences.

A Appendix A: Tables

Appendix Table A1. Baseline Summary Statistics - Midline Sample

Characteristic	Overall N = 4,167	Control N = 2,096	Treatment N = 2,071	p-value
Demographic and Socioeconomic Characteristics				
Age (years)	26.26 (5.72)	26.28 (5.76)	26.24 (5.68)	0.9
Aged 15–19 (adolescent)	8.5%	8.2%	8.8%	0.4
Married	79%	79%	80%	0.3
Cohabiting, unmarried	1.2%	1.0%	1.5%	0.2
Highest education: Tertiary	31%	31%	31%	>0.9
Highest education: Secondary	49%	49%	50%	0.7
Highest education: Primary	19%	20%	19%	0.5
Highest education: None	0.8%	0.7%	0.9%	0.5
Location: Western Kenya	42%	42%	43%	0.6
Location: Central Kenya	35%	36%	35%	0.6
Location: Eastern Kenya	16%	16%	15%	0.7
Location: Coastal Kenya	6.9%	6.7%	7.1%	0.6
Ever given birth (live or stillbirth)	58%	57%	58%	0.3
Number of living children	1.78 (1.06)	1.82 (1.09)	1.74 (1.03)	0.12
FP Knowledge and Beliefs				
Aware of return to fertility postpartum	36%	35%	37%	0.2
Knowledge index: LAM	0.51 (0.76)	0.48 (0.75)	0.54 (0.77)	0.014
Husband supportive of PPFP	93%	93%	94%	0.6
Behavioral and Psychological Factors				
Needs reminders to start tasks	13%	13%	12%	0.4
Difficulty planning ahead	20%	19%	21%	0.2
Difficulty following through	30%	29%	30%	0.5
Felt more strained than usual (past month)	31%	31%	30%	0.4
Access and Financial Constraints				
Travel time to ANC facility (min)	29.16 (22.67)	28.86 (22.32)	29.47 (23.02)	0.6
Obtaining 2,000 KSh for care: difficult	0.72 (0.45)	0.73 (0.44)	0.72 (0.45)	0.4
FP History and Intentions				
Current pregnancy was unplanned	34%	34%	34%	>0.9
Does not want more children	29%	29%	29%	0.7
Wants to wait 2+ years before next pregnancy	97%	96%	97%	0.4
Prior FP use	64%	64%	64%	>0.9
Last method used was modern	61%	60%	61%	0.7
Last FP source: public facility	34%	33%	35%	0.2
Last FP source: private facility	11%	11%	12%	0.6
Last FP source: pharmacy	19%	19%	18%	0.2
Intends to use PPFP	85%	85%	85%	0.8
Plans to use a modern method postpartum	70%	67%	72%	0.006
Plans to start method within 6 months postpartum	69%	69%	68%	0.5
Weeks to EDD	7.59 (3.31)	7.58 (3.28)	7.61 (3.35)	0.8
Test of joint orthogonality, p-value				0.12

Abbreviations: PMA = Performance Monitoring for Action; FP = family planning; LAM = lactational amenorrhea method; PPFP = postpartum family planning; ANC = antenatal care; KSh = Kenyan shillings; EDD = expected delivery date.

Notes: This table presents baseline characteristics of participants, overall and stratified by treatment assignment. Means and standard deviations (SD) are shown for continuous variables; frequencies and percentages for categorical variables. P-values are from chi-square tests for categorical variables and Wilcoxon rank-sum tests for continuous variables, testing for differences between treatment and control groups. The joint F test p-value, based on randomization inference, is reported as an overall assessment of baseline covariate balance. Missing values are excluded from variable-specific denominators. Randomization was stratified by age group and geographic location.

Appendix Table A2. Baseline Summary Statistics - Endline Sample

Characteristic	Overall N = 3,743	Control N = 1,895	Treatment N = 1,848	p-value
Demographic and Socioeconomic Characteristics				
Age (years)	26.34 (5.69)	26.36 (5.73)	26.33 (5.66)	>0.9
Aged 15–19 (adolescent)	7.9%	7.5%	8.3%	0.4
Married	80%	80%	80%	0.6
Cohabiting, unmarried	1.2%	1.0%	1.5%	0.3
Highest education: Tertiary	31%	31%	31%	0.8
Highest education: Secondary	49%	48%	49%	0.3
Highest education: Primary	19%	20%	19%	0.3
Highest education: None	0.8%	0.8%	0.9%	0.8
Location: Western Kenya	42%	42%	42%	0.7
Location: Central Kenya	35%	35%	35%	>0.9
Location: Eastern Kenya	16%	16%	15%	0.7
Location: Coastal Kenya	7.1%	7.1%	7.2%	0.9
Ever given birth (live or stillbirth)	58%	58%	59%	0.4
Number of living children	1.78 (1.06)	1.81 (1.09)	1.75 (1.04)	0.2
FP Knowledge and Beliefs				
Aware of return to fertility postpartum	36%	35%	37%	0.2
Knowledge index: LAM	0.52 (0.76)	0.48 (0.75)	0.55 (0.78)	0.005
Husband supportive of PPFP	93%	93%	93%	>0.9
Behavioral and Psychological Factors				
Needs reminders to start tasks	13%	13%	12%	0.4
Difficulty planning ahead	20%	19%	21%	0.2
Difficulty following through	30%	29%	31%	0.3
Felt more strained than usual (past month)	30%	31%	30%	0.7
Access and Financial Constraints				
Travel time to ANC facility (min)	28.92 (22.44)	28.49 (22.13)	29.36 (22.75)	0.3
Obtaining 2,000 KSh for care: difficult	0.72 (0.45)	0.73 (0.45)	0.72 (0.45)	0.6
FP History and Intentions				
Current pregnancy was unplanned	34%	33%	34%	0.5
Does not want more children	29%	29%	29%	0.6
Wants to wait 2+ years before next pregnancy	97%	96%	97%	0.2
Prior FP use	65%	65%	65%	>0.9
Last method used was modern	61%	61%	62%	0.8
Last FP source: public facility	35%	34%	35%	0.4
Last FP source: private facility	11%	11%	12%	0.6
Last FP source: pharmacy	19%	19%	18%	0.4
Intends to use PPFP	85%	85%	85%	>0.9
Plans to use a modern method postpartum	70%	68%	72%	0.004
Plans to start method within 6 months postpartum	69%	69%	69%	0.8
Weeks to EDD	7.61 (3.31)	7.60 (3.27)	7.61 (3.35)	>0.9
Test of joint orthogonality, p-value				0.2

Abbreviations: PMA = Performance Monitoring for Action; FP = family planning; LAM = lactational amenorrhea method; PPFP = postpartum family planning; ANC = antenatal care; KSh = Kenyan shillings; EDD = expected delivery date.

Notes: This table presents baseline characteristics of participants, overall and stratified by treatment assignment. Means and standard deviations (SD) are shown for continuous variables; frequencies and percentages for categorical variables. P-values are from chi-square tests for categorical variables and Wilcoxon rank-sum tests for continuous variables, testing for differences between treatment and control groups. The joint F test p-value, based on randomization inference, is reported as an overall assessment of baseline covariate balance. Missing values are excluded from variable-specific denominators. Randomization was stratified by age group and geographic location.

Appendix Table A3. Descriptive Statistics at Midline

Characteristic	Overall N = 4,167	Control N = 2,096	Treatment N = 2,071
Pregnancy and Postpartum Outcomes			
Delivered, baby alive	96%	97%	96%
Delivered alive, but baby no longer alive	2.5%	2.1%	2.8%
Delivered a stillbirth	0.7%	0.7%	0.8%
Had a miscarriage	0.6%	0.6%	0.6%
Breastfeeding and Fertility Indicators			
Currently breastfeeding	100%	100%	100%
No more than 4 hours between breastfeeds	96%	96%	96%
No more than 6 hours between breastfeeds	99%	99%	99%
Baby given other food or liquids	17%	15%	18%
Menstrual periods have returned	53%	54%	52%
Meets all three LAM criteria	36%	36%	36%
FP Counseling and Health Contacts			
Discussed FP during ANC	59%	59%	58%
Discussed FP in last ANC month	49%	48%	50%
Discussed FP during delivery care	55%	55%	56%
Had any postpartum checkups	60%	60%	60%
Number of postpartum checkups	1.29 (1.30)	1.30 (1.32)	1.28 (1.28)
Weeks until first postpartum checkup	3.94 (2.48)	3.89 (2.42)	4.00 (2.55)
Discussed FP at postpartum visit	71%	72%	70%
Discussed FP at child immunization visit	65%	65%	64%
Access and Behavioral Factors			
Experienced difficulty accessing FP	3.4%	3.4%	3.4%
Needs reminders to start tasks	7.5%	7.4%	7.7%
Difficulty planning ahead	12%	12%	12%
Difficulty following through	22%	23%	22%
Felt more strained than usual in past month	25%	24%	25%

Abbreviations: FP = family planning; LAM = lactational amenorrhea method; ANC = antenatal care; PP = postpartum.

Notes: This table summarizes selected participant characteristics reported at the 3-month follow-up (midline). Means and standard deviations (SD) are shown for continuous variables; frequencies and percentages are reported for categorical variables. Missing values are excluded from variable-specific denominators.

Appendix Table A4. Descriptive Statistics at Endline

Characteristic	Overall N = 3,743	Control N = 1,895	Treatment N = 1,848
FP Counseling and Health Contacts			
Had any postpartum visits since midline	53%	52%	53%
Number of postpartum visits since midline	1.02 (1.19)	1.00 (1.20)	1.03 (1.19)
Discussed FP at a postpartum visit	77%	77%	77%
Discussed FP at child immunization visit	56%	56%	55%
Behavioral and Psychological Factors			
Needs reminders to start tasks	8.6%	8.6%	8.5%
Difficulty planning ahead	13%	13%	13%
Difficulty following through	23%	22%	24%
Felt more strained than usual in past month	23%	23%	23%
Exposure to and Engagement with PROMPTS Messages			
Currently receiving PROMPTS messages	98%	97%	99%
Always reads PROMPTS messages	81%	81%	81%
Often reads PROMPTS messages	14%	14%	14%
Partner is enrolled in PROMPTS	19%	19%	19%
Partner is receiving PROMPTS messages	82%	84%	79%

Abbreviations: FP = family planning.

Notes: This table summarizes selected participant characteristics reported at the 6-month follow-up (endline). Means and standard deviations (SD) are shown for continuous variables; frequencies and percentages are reported for categorical variables. Missing values are excluded from variable-specific denominators.

Appendix Table A5. Treatment Group Engagement with the Initial Informational Message Flows

Characteristic	N = 2,376
Any user engagement	463 / 2,374 (20%)
Exclusive breastfeeding	81 / 463 (17%)
Implant contraception	76 / 463 (16%)
Depo-Provera injection	80 / 463 (17%)
Combined hormonal pill	47 / 463 (10%)
Condom use	22 / 463 (4.8%)
Copper IUD	160 / 463 (35%)
Rhythm beads	51 / 463 (11%)
Progestin-only Pill	30 / 463 (6.5%)
Hormonal IUD	50 / 463 (11%)

Abbreviations: IUD = intrauterine device.

Notes: This table summarizes engagement with the initial counseling messages sent at approximately 7.5 months of pregnancy to participants in the treatment group (N = 2,376). These messages introduced postpartum family planning and provided brief educational content on multiple contraceptive methods. Women were invited to respond if they were interested in learning more. Engagement is defined as any texted response to the initial message flow. Among the 463 women (20%) who responded, follow-up messages provided more detailed information tailored to their interest. The most commonly selected methods were copper IUD (35%), exclusive breastfeeding (17%), and the Depo-Provera injection (17%). In each row, the numerator/denominator and percentage indicate the number and share of women who responded to that specific prompt, not the full treatment-group denominator.

Appendix Table A6. Treatment Group Engagement with the SDM Message Flows

Characteristic	**N = 2,376**
User selected preferred method attribute(s)	422 / 2,123 (20%)
Prefer method that is highly effective	113 / 422 (27%)
Prefer method that lasts a long time	91 / 422 (22%)
Prefer method that allows regular periods	67 / 422 (16%)
Prefer method safe while breastfeeding	148 / 422 (35%)
Prefer method stoppable for future pregnancy	127 / 422 (30%)
At least one method suggested based on user input	322 / 2,123 (15%)
Among methods suggested: Exclusive breastfeeding (LAM)	31 / 322 (9.6%)
Among methods suggested: Implant	86 / 322 (27%)
Among methods suggested: Depo (Injection)	72 / 322 (22%)
Among methods suggested: Combined hormonal pill	16 / 322 (5.0%)
Among methods suggested: Condoms	8 / 322 (2.5%)
Among methods suggested: Copper IUD/coil	28 / 322 (8.7%)
Among methods suggested: Rhythm/Cycle beads	10 / 322 (3.1%)
Among methods suggested: Progestin-only Pill	55 / 322 (17%)
Among methods suggested: Hormonal IUD	10 / 322 (3.1%)
Among methods suggested: IUD (Copper or Hormonal)	6 / 322 (1.9%)
Method most interested in discussing with provider	
Implant	49 / 135 (36%)
Depo (Injection)	27 / 135 (20%)
Progestin-only Pill	19 / 135 (14%)
Copper IUD/coil	12 / 135 (8.9%)
Exclusive breastfeeding (Lactational Amenorrhea)	8 / 135 (5.9%)
Rhythm method/Cycle beads	7 / 135 (5.2%)
Combined hormonal pill	6 / 135 (4.4%)
IUD (Copper or Hormonal)	4 / 135 (3.0%)
Condoms	2 / 135 (1.5%)
Hormonal IUD	1 / 135 (0.7%)

Abbreviations: SDM = shared decision-making; LAM = lactational amenorrhea method; IUD = intrauterine device; Depo = Depo-Provera injectable contraceptive.

Notes: This table summarizes engagement with the SDM message flows initiated at approximately 8 months of gestation among women in the treatment group (N = 2,381). Women were asked to identify their most valued method attributes, and the platform suggest up to three methods using a decision tree. The final step of the SDM flow asked users to select the method they were most interested in discussing with a provider. Engagement levels reflect actual message-interaction data recorded through the PROMPTS system. In each row, the numerator/denominator and percentage indicate the number and share of women who responded to that specific message prompt (i.e., provided a response), not the entire treatment-group denominator.

Appendix Table A7. Treatment Group Engagement with Postpartum Message Flows

Characteristic	N = 2,376
21 days postpartum	
Selected topics to learn about	224 / 2,107 (11%)
Topics selected to learn – Timing	43 / 224 (19%)
Topics selected to learn – Safety	32 / 224 (14%)
Topics selected to learn – Traditional methods	21 / 224 (9.4%)
Topics selected to learn – Resuming sex	51 / 224 (23%)
Topics selected to learn – Family planning methods	79 / 224 (35%)
36 days postpartum	
Confirm still interested in chosen method	34 / 105 (32%)
Method selected to learn more about	106 / 1,716 (6.2%)
Selected to learn: Exclusive breastfeeding (LAM)	10 / 106 (9.4%)
Selected to learn: Implant	21 / 106 (20%)
Selected to learn: Depo (Injection)	30 / 106 (28%)
Selected to learn: Combined hormonal pill	11 / 106 (10%)
Selected to learn: Condoms	5 / 106 (4.7%)
Selected to learn: Copper IUD/coil	12 / 106 (11%)
Selected to learn: Rhythm/Cycle beads	10 / 106 (9.4%)
Selected to learn: Progestin-only Pill	6 / 106 (5.7%)
Selected to learn: Hormonal IUD	3 / 106 (2.8%)
45 days postpartum	
Currently using FP	370 / 956 (39%)
Experienced FP side effects	111 / 311 (36%)
Shared reason for not using FP	516 / 2,201 (23%)
Reason: Do not need yet	62 / 516 (12%)
Reason: I am exclusively breastfeeding	112 / 516 (22%)
Reason: Do not want to	8 / 516 (1.6%)
Reason: Facility stocked out	13 / 516 (2.5%)
Reason: Worried about side effects	101 / 516 (20%)
Reason: Want more information before deciding	225 / 516 (44%)
2.5 months postpartum	
Considering introducing food to baby	309 / 931 (33%)
Has resumed menstruation	226 / 552 (41%)

Abbreviations: LAM = lactational amenorrhea method; FP = family planning; IUD = intrauterine device.

Notes: This table summarizes engagement of treatment group participants (N = 2,376) with follow-up counseling messages sent after delivery. At 21 days postpartum, women were invited to learn more about various topics including method safety, timing, and resuming sex; numerators and denominators in each row indicate women who provided a response to that specific prompt (percentages are calculated among respondents). Of those who engaged at 21 days, 36% requested more information about family planning methods. At 36 days, users were asked if they were still interested in their previously selected method and were invited to learn more; the most frequently selected methods were injectables (27%) and implants (20%). At 45 days postpartum, women were asked whether they had started a method; of those who responded, 39% said yes. Among those not using a method, the most common reasons were needing more information (43%), concerns about side effects (19%), and reliance on exclusive breastfeeding (22%). Messages at 2.5 months collected updates on menstruation and breastfeeding status to inform continued LAM use. Numerators and denominators reflect respondents to each question (percentages calculated among respondents).

Appendix Table A8. Method Mix

Characteristic	Overall N = 4,751	Control N = 2,375	Treatment N = 2,376
Prior Experience and Planned Use at Baseline			
Most recent method before study			
LARCs	20%	20%	20%
SARC	38%	37%	38%
Barrier	2.6%	2.6%	2.6%
LAM	0%	0%	0%
Traditional	2.9%	3.0%	2.7%
No method	37%	37%	37%
Unsure/Refused	0.1%	0.1%	0.2%
Missing data	0%	0%	0%
Method in mind			
LARCs	32%	32%	33%
SARC	26%	25%	27%
Barrier	0.3%	0.3%	0.2%
LAM	<0.1%	<0.1%	<0.1%
Traditional	0.7%	0.9%	0.5%
No method	15%	15%	15%
Unsure/Refused	25%	27%	24%
Missing data	0%	0%	0%
Contraceptive Uptake at Follow-up			
Method adopted at 3 months			
LARCs	16%	16%	16%
SARC	29%	29%	28%
Barrier	0.6%	0.7%	0.5%
LAM	1.0%	0.7%	1.2%
Traditional	0.3%	0.2%	0.3%
No method	41%	41%	40%
Unsure/Refused	<0.1%	<0.1%	0.1%
Missing data	12%	12%	13%
Method adopted at 6 months			
LARCs	23%	23%	24%
SARC	30%	31%	29%
Barrier	0.4%	0.4%	0.5%
LAM	0.2%	0.2%	0.1%
Traditional	0.4%	0.4%	0.3%
No method	25%	25%	24%
Unsure/Refused	<0.1%	<0.1%	0.1%
Missing data	21%	20%	22%

Abbreviations: LARC = long-acting reversible contraception (implants, IUDs); SARC = short-acting reversible contraception (injectables, pills); LAM = lactational amenorrhea method.

Notes: This table summarizes participants' reported contraceptive method use and preferences at four points: most recent method prior to study enrollment, postpartum method in mind at baseline, and methods adopted at 3 and 6 months postpartum. Categories include LARCs, SARCs (injectables, pills), barrier methods, LAM, traditional methods (e.g., withdrawal, rhythm), no method, and "unsure/refused." Method in mind was assessed at baseline, while adoption was based on self-reported use at the 3- and 6-month follow-up surveys. Missing responses are indicated in the final row of each section. The sample is split by treatment arm and includes all randomized participants (N = 4,751).

Appendix Table A9. Summary of Outcomes Among Women in the Treatment Group by Engagement Type

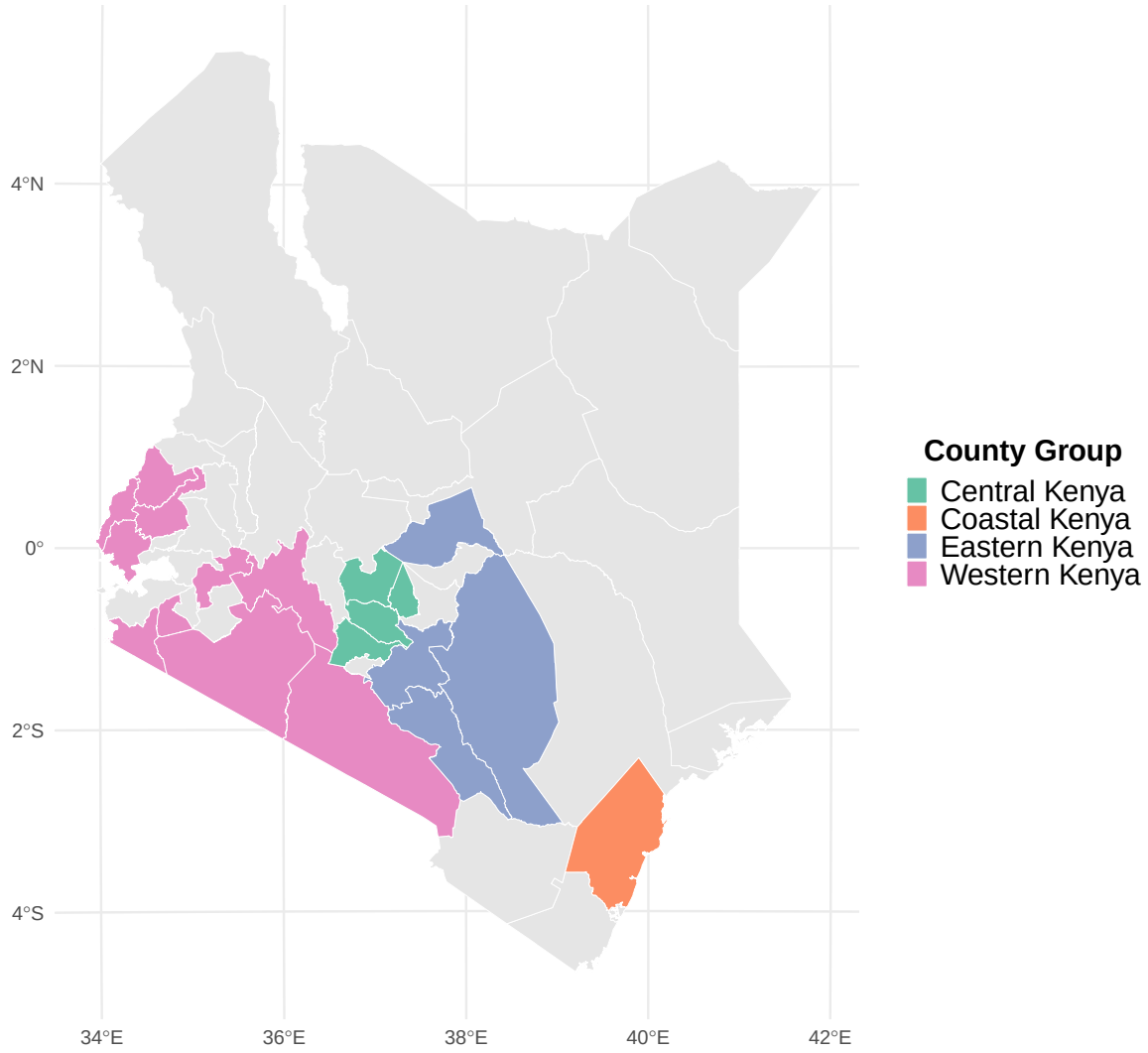
Characteristic	**Non-SDM Participants** N = 1,461	**SDM Participants** N = 377	**p-value**
Primary Outcomes			
Use of modern methods at 3 Months	749 / 1,458 (51%)	225 / 377 (60%)	0.004
Use of modern methods at 6 Months	881 / 1,293 (68%)	249 / 343 (73%)	0.11
Secondary Outcomes			
Knowledge of LAM at 3 Months	0.74 (0.86)	0.84 (0.86)	0.037
Use of LARCs or SARCs at 6 months	874 / 1,293 (68%)	246 / 343 (72%)	0.14
Method satisfaction at 6 Months	4.58 (1.01)	4.61 (0.95)	0.9
Intention to continue FP method at 6 months	699 / 845 (83%)	199 / 243 (82%)	0.8

Abbreviations: SDM = shared decision-making; LAM = lactational amenorrhea method; LARC = long-acting reversible contraception; SARC = short-acting reversible contraception; FP = family planning.

Notes: This table compares outcomes between women in the treatment group who engaged with the SDM tool during pregnancy and were reached for follow-up (N = 377) and those in the treatment group who did not engage with the SDM or were not offered it (N = 1,950). SDM engagement refers to accepting the message prompt and participating in the preference-ranking flow. All outcomes are based on self-reports collected during the 3-month (midline) and 6-month (endline) surveys. Means and standard deviations (SD) are shown for continuous outcomes, and proportions for binary outcomes. P-values are from Wilcoxon rank-sum tests (continuous outcomes) or chi-square tests (binary outcomes).

Appendix B: Figures

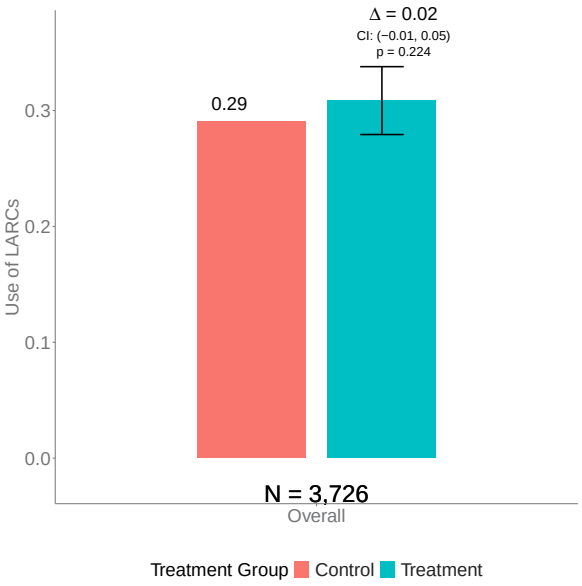
Figure B1. Geographical Distribution of the Study Sample



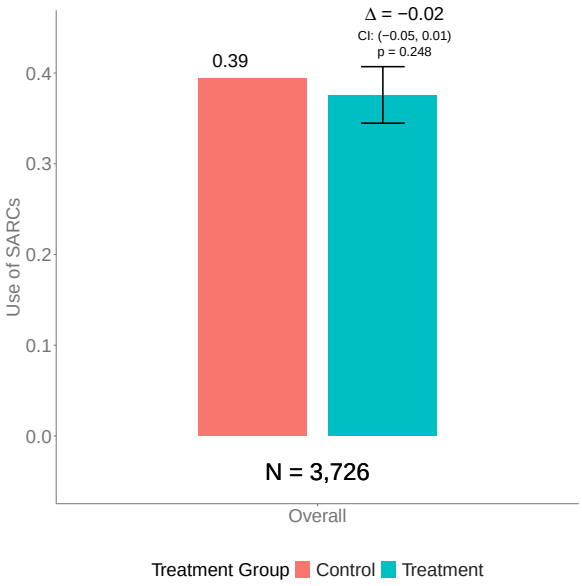
Notes: This map displays the geographical distribution of study participants across Kenya. The colored areas indicate the counties represented in the study sample, grouped into four major regions: Central, Coastal, Eastern, and Western Kenya.

Figure B2. Treatment effects on uptake of LARC vs. SARC methods

(a) Use of LARCs at 6 Months

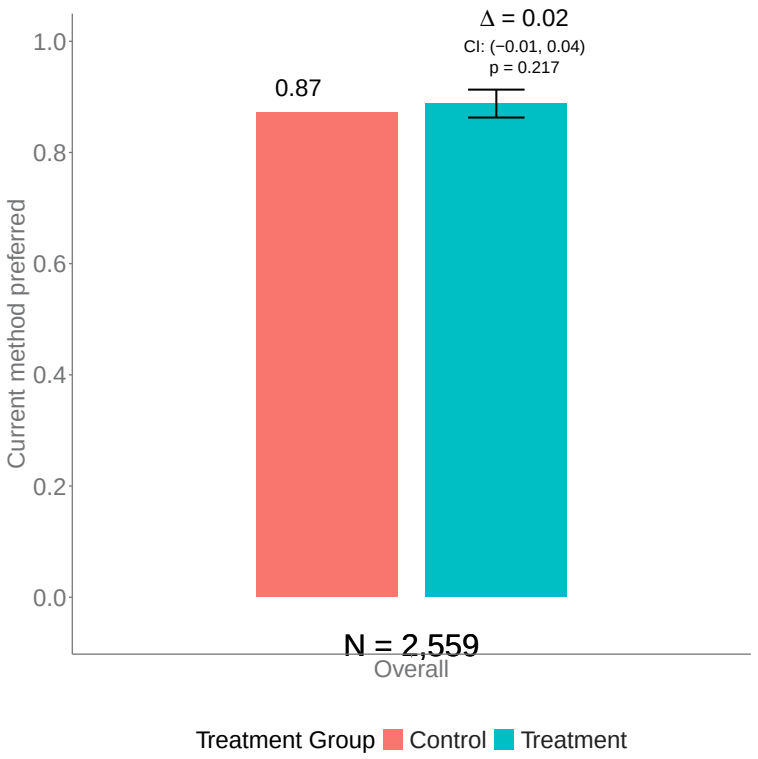


(b) Use of SARCs at 6 Months



Notes: These figures present treatment effects on uptake of long-acting reversible contraceptives (LARCs) and short-acting reversible contraceptives (SARCs), measured at the 6-month follow-up. The left bar in each figure shows the mean for the control group; the right bar shows the control group mean plus the estimated treatment effect. Confidence intervals and p-values are from linear regressions adjusting for stratification variables.

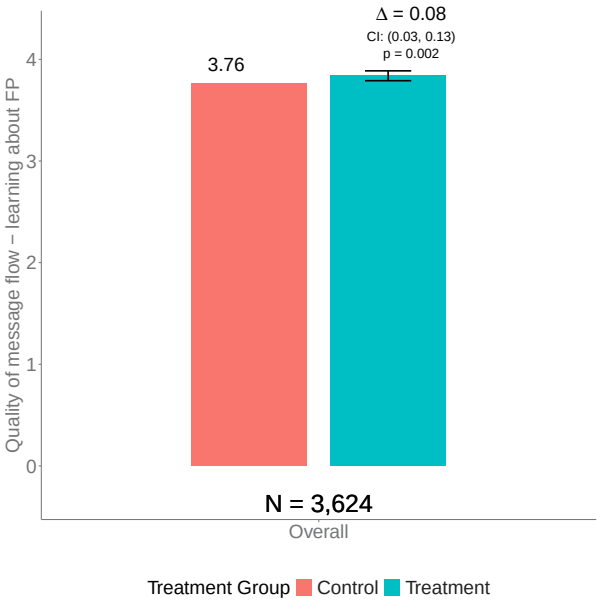
Figure B3. Treatment effect on the concordance between actual methods and preferred methods at 6 months



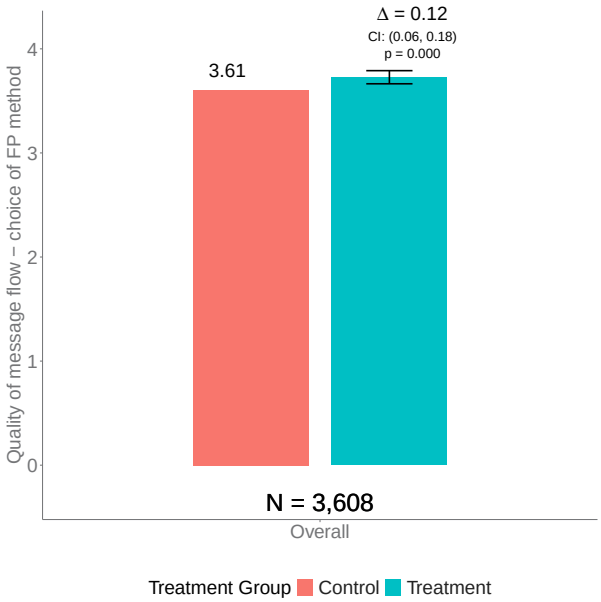
Notes: This figure present treatment effects on the concordance between women's preferred method and their actual method, measured at the 6-month follow-up among women who reported using a method. The left bar shows the mean for the control group; the right bar shows the control group mean plus the estimated treatment effect. The confidence interval and p-value are from a linear regression adjusting for stratification variables.

Figure B4. User-Rated Quality of PROMPTS Message Flows (Sub-Items)

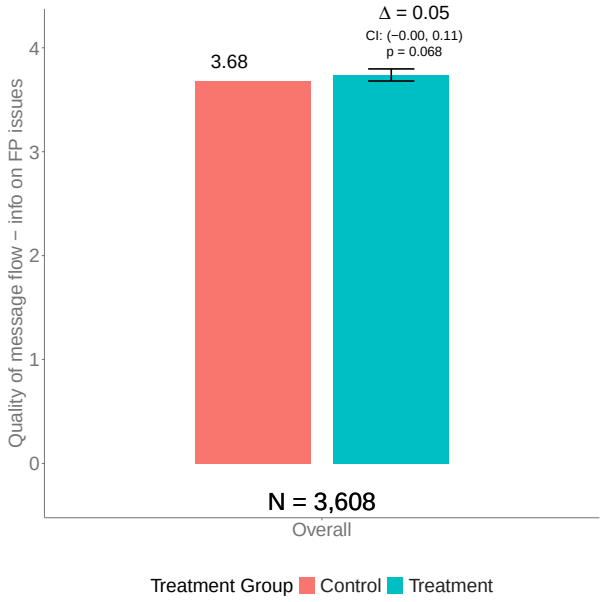
(a) Learning About Family Planning



(b) Choosing a Method



(c) Addressing Family Planning Issues



Notes: These figures present treatment effects on user-rated quality of the PROMPTS message flows related to family planning (FP), measured at the 6-month follow-up among women who confirmed receiving the messages. Participants were asked to rate how helpful the messages were in (a) learning about family planning methods, (b) choosing a method, and (c) providing useful information on FP issues. Ratings were collected on a scale from 0 ("not helpful at all") to 4 ("very helpful"). The left bar in each figure shows the mean for the control group; the right bar shows the control group mean plus the estimated treatment effect. Confidence intervals and p-values are from linear regressions adjusting for stratification variables.

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