



# HEALTHY WOMEN, HEALTHY FAMILIES

## সুস্থ মা, সুস্থ পরিবার

Evaluation findings from a group model intervention among first-time mothers in an urban area of Bangladesh

### Introduction and background

Recent evidence indicates that group antenatal care and group postnatal care (GANC-GPNC) can provide relevant and timely pregnancy-related information, support positive behavioral changes and increase emotional and social support during pregnancy [1,2,3]. There is growing recognition for the need of alternative models of care that better respond to the needs of women for information and social support and to improve coverage and quality of maternal and newborn health (MNH) services [1,2,3]. However, there is limited evidence on the feasibility and effectiveness of GANC-GPNC particularly among Bangladeshi women. The Healthy Women, Healthy Families/Shustha Ma, Shustha Poribar (HWHF) is a four-year project led by MSH in partnership with BRAC, SCOPE, and the Population Council serving as the operations research lead [4]. Operations and implementation research was embedded in the project to evaluate the impact of a person-centered GANC-GPNC model to improve the quality and use of MNH and FP services and information among first-time mothers (FTMs) aged 15-24 years and their husbands in the urban municipality of Tongi, Gazipur, Bangladesh.

### Data and methods

A human-centered design (HCD) approach was utilized to implement the GANC-GPNC intervention in two BRAC Maternity Centers (BMCs) for 32 months. During this time another two BMCs served as control sites. The evaluation applied a quasi-experimental pre-post control group design that drew on a mixed methods approach. A simple random sampling procedure was employed to select respondents from BRAC FTM lists while qualitative informants were selected purposively. A total of 4,400 FTMs were interviewed in baseline and endline surveys, 2,200 each from intervention and control arms, which equates to 550 FTMs from each BMC area. Qualitative data was collected exclusively from the intervention areas at endline, 12 focus group discussions (FGDs) and 26 in-depth interviews (IDIs). FGDs were conducted with FTMs, first-time fathers (FTFs) and mothers/mothers-in-law. IDIs were conducted with FTMs, FTFs and BMC service providers (Medical Officer, Midwives, Area Managers, and Program Organizers).

The intervention included conducting five GANC sessions and two GPNC sessions with FTMs, along with three group sessions (two GANC and one GPNC) with FTFs/husbands. In each GANC and GPNC session, trained midwives discussed and disseminated key messages on various topics related to pregnancy, delivery, postnatal period, and newborn care.



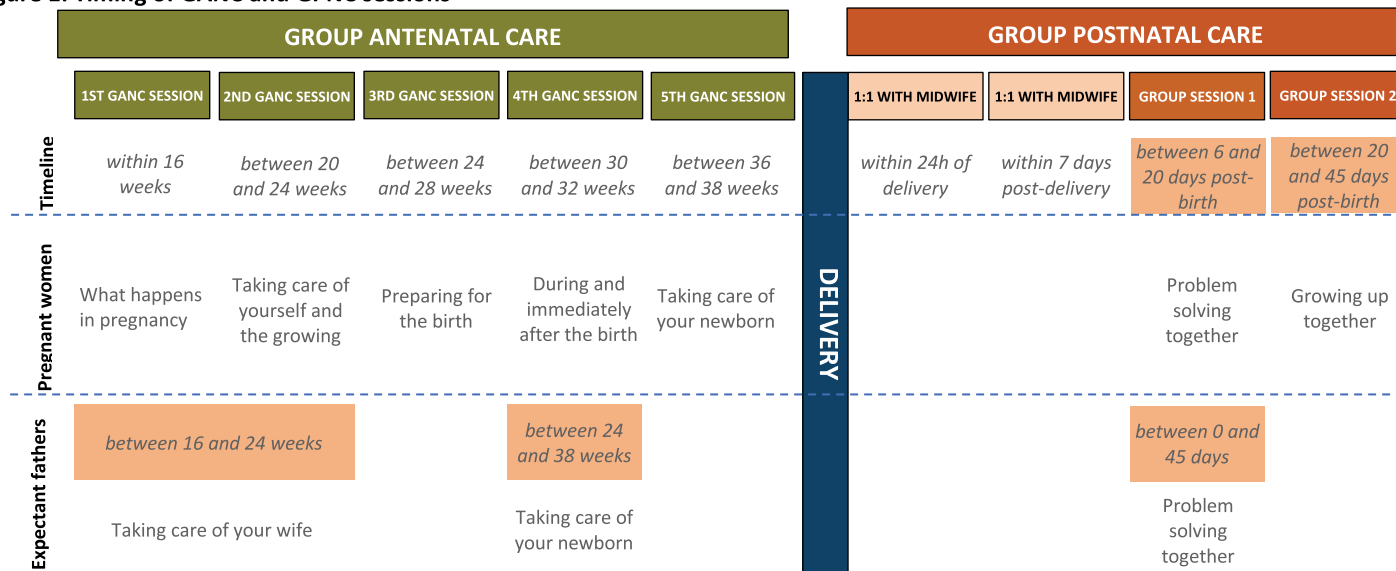
### Key Research Questions

- What is the effect of the group model interventions (using a person-centered model) on the project outcomes such as ANC retention, birth spacing, and FP, etc. in intervention sites compared to control sites (using “classical” ANC services)?
- What is the effect of the group model interventions (using a person-centered model) on the quality of ANC and PNC services in the intervention sites compared to control sites (using “classical” ANC services)?
- What is the effect of the group model interventions (using a person-centered model) on adoption of healthy behaviors in the intervention sites compared to control sites (using “classical” ANC services)?



Pregnant women were identified as early as possible in the community by BRAC field workers. Groups were formed with FTMs at the same gestational age and kept together from session to session. Each group session was designed to accommodate 6–10 participants. The first GANC session ran for 60 minutes and the subsequent sessions for 45 minutes. FTMs were offered physical checkups after each of the GANC-GPNC sessions. The timing of GANC and GPNC sessions is outlined in Figure 1.

**Figure 1: Timing of GANC and GPNC sessions**



Data collectors were recruited and trained to collect data through android mobile phones, while maintaining all ethical procedures. Ethical approval for the study was received from both the Population Council and Bangladesh Medical Research Council (BMRC). Data was collected at two points in time: January- February 2022 (baseline) and May- July 2024 (endline). Quantitative analyses include both descriptive analysis and analytics using frequency distributions, bivariate, and modeling. The Difference-in-Differences (DiD) method was used to estimate causal effects by comparing the changes in outcomes over time between intervention and control group. Chi-squared test and Fisher’s exact test (small sample size) were used to determine the p-values. Qualitative data were analyzed thematically in demonstrating improved knowledge, access and use of MNH and postpartum family planning (PPFP) services, effect of GANC-PNC in peer learning, social support and couple communication at the endline among young FTMs, as well as perspectives from healthcare providers and other stakeholders about the feasibility and acceptability of the group model. The findings of qualitative analysis were triangulated with quantitative findings. This technical brief presents select findings from the operational research. Additional details are available in the full final report [6].

**Key findings**

**Demographics**

Analysis of background characteristics shows that there is no significant difference between the FTMs in control and intervention groups at baseline and endline. This indicates that similar FTMs were recruited at baseline and endline.

**Intervention engagement**

While it was expected that all FTMs would attend five GANC and two GPNC sessions, data showed that 57 percent of FTMs joined GANC1, 71 percent GANC2, 65 percent GANC3, 59 percent GANC4, and 42 percent GANC5, among the surveyed FTMs in the intervention group. For GPNC sessions, the attendance was poor, with 13 percent attended GPNC1 and 17 percent attended GPNC 2.

**Changes of FTMs’ knowledge of danger signs during pregnancy, delivery, newborn care, and postnatal period**

A notable achievement of the intervention was the significant improvement in FTMs’ knowledge of danger signs during pregnancy, delivery, newborn care, postnatal period and family planning in the intervention group compared to the control group, as indicated by the DiDs and p values. For example, the percentage of FTMs who could correctly identify at least three danger signs during pregnancy rose significantly from 1 percent in the control group and 2 percent in the intervention group at baseline (p=0.196) to 6 percent in the control group and 41 percent in the intervention group at endline (p<0.001), with a DiD of 34 percent (p<0.001) (Figure 2). Similarly, there is significant improvement in knowledge of at least three danger signs during pregnancy as shown below in Figure 2. Detailed knowledge of danger signs during pregnancy will be found in the full report (Table 2a in the full report) [6]. Further analysis showed that FTMs knowledge on at least three danger signs during pregnancy has progressively increased from 43 percent in the first group ANC session (GANC1) to 51 percent at

the seventh session (through GPNC2). These results suggest that the GANC-GPNC sessions were effective in improving FTMs' knowledge of multiple potential complications during pregnancy (Table 2a1 in the full report) [6].

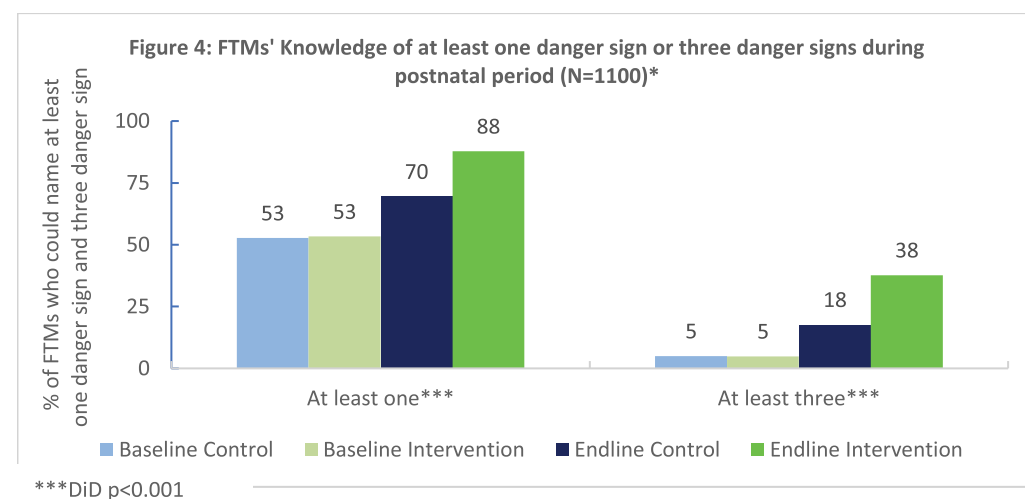
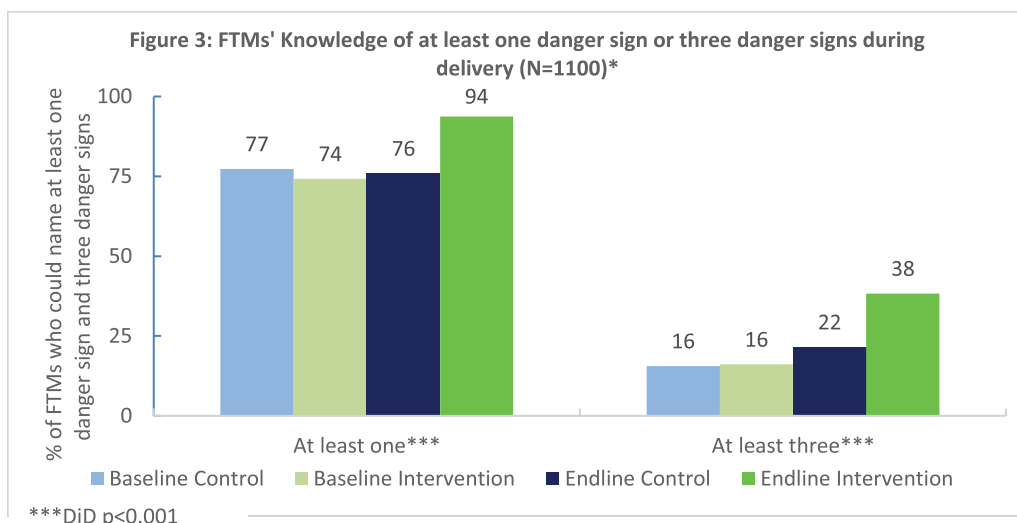
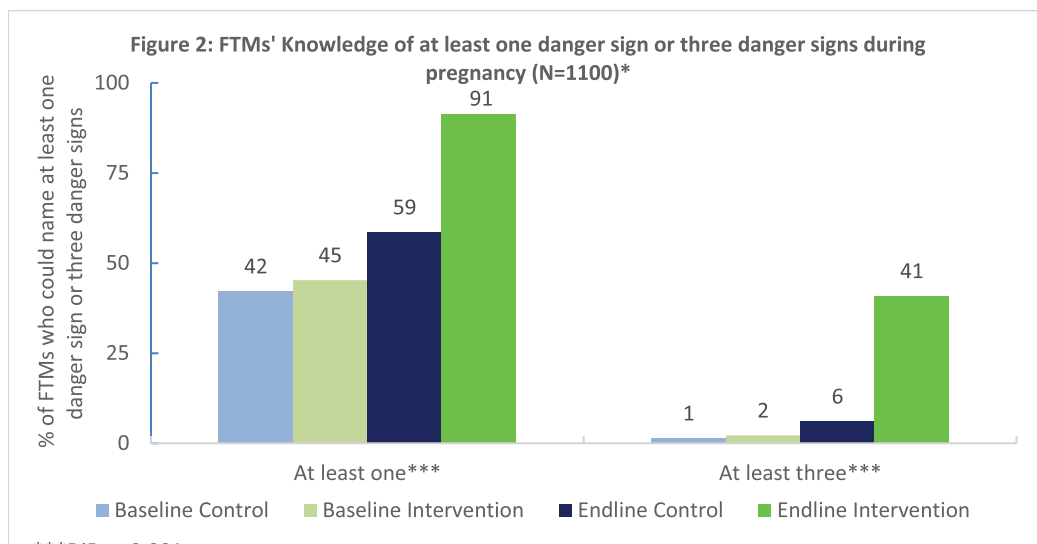
Qualitative interviews with FTMs and FTFs corroborated findings from the survey. Respondents of all groups reiterated that they benefited from learning the danger signs during pregnancy through attending the GANC sessions. A FTM in FGD said, "I learned the five danger signs for pregnant mothers. If one has any of the five danger signs before having a baby, such as blurred vision and

dizziness, she needs to go to the doctor. And if mother sees bleeding, she needs to go to the doctor. And they (midwives) also told us about the five danger signs after having a baby." A FTF in an IDI said, "What I most recalled from the sessions is the knowledge of five danger signs for pregnant mothers. I understood that when these five signs are seen, pregnant mothers can no longer stay at home. They must quickly visit the nearby medical center or delivery center."

The percentage of FTMs who could correctly identify at least three danger signs during labor and childbirth rose significantly from 16 percent in the control group and 16 percent in intervention at baseline

( $p=0.770$ ) to 22 percent in the control group and 38 percent in intervention group at endline ( $p<0.001$ ), with a DiD of 16 percent ( $p<0.001$ ) (Figure 3). Detailed knowledge of danger signs during delivery will be found in the full report (Table 2b in the full report) [6]. Further analysis showed that FTMs knowledge on at least three danger signs during labor and childbirth progressively increased from 29 percent among those who only attended the first session (GANC1) to 54 percent among those that attended all seven sessions (through GPNC2) (Table 2b1 in the full report) [6].

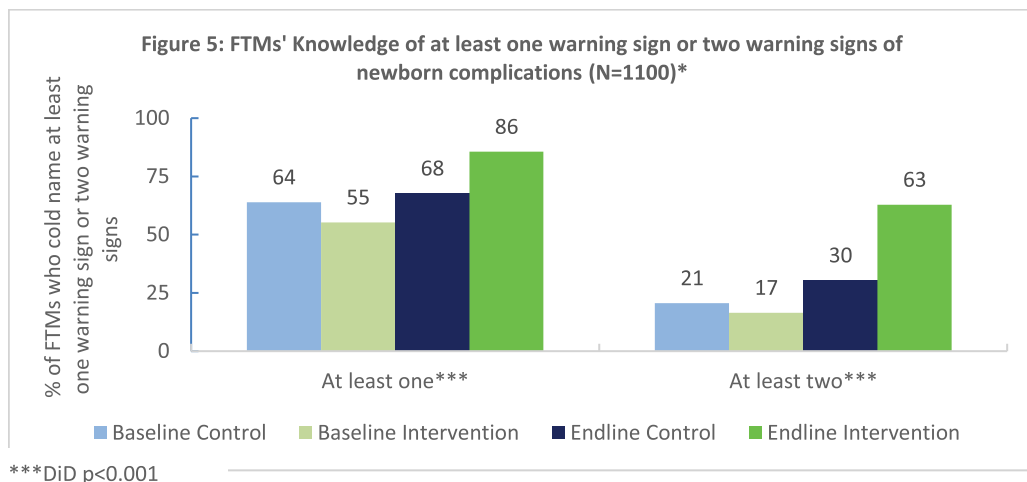
The percentage of FTMs who could correctly identify at least three danger signs during postnatal period rose significantly from 5 percent in the control group and 5 percent in the intervention at baseline ( $p=0.922$ ) to 18 percent in the control and 38 percent in the intervention at endline ( $p<0.001$ ), with a DiD of 20 percent ( $p<0.001$ ) (Figure 4). Detailed knowledge of danger signs during the postnatal period will be found in the full report (Table 2c in the full report) [6]. Further analysis showed that FTMs knowledge on at least three danger signs during the postnatal period has progressively increased from 38 percent in the first session (GANC1) to 44 percent at the seventh



session (through GPNC2). These results suggest that the GANC-GPNC sessions educated FTMs about multiple potential complications during postnatal period (Table 2c1 in the full report) [6].

Participants in FGD expressed that knowledge in the group sessions benefited them in better preparing themselves and gave them confidence to deal with potential challenges. A FTM in FGD recalled her learnings from the group sessions, *“I learned about the danger signs for the first time here (group sessions). The danger signs for the mother are dizziness, bleeding, fever, headache, delayed delivery, and the appearance of other body parts before the baby’s head.”*

The percentage of FTMs who could correctly identify at least two warning signs of newborn complications rose significantly from 21 percent in the control group and 17 percent in the intervention group at baseline ( $p < 0.010$ ) to 30 percent in the control group and 63 percent in the intervention group at endline ( $p < 0.001$ ), with a DiD of 37 percent ( $p < 0.001$ ) (Figure 5). Detailed knowledge of warning signs of newborn complications will be found in the full report (Table 2d in the full report) [6]. Further analysis showed that FTMs knowledge on at least two warning signs of newborn complications has progressively increased from 60 percent among those who only attended the first session (GANC1) to 75 percent among those who attended all seven sessions (through GPNC2) (Table 2d1 in the full report) [6].



In the qualitative interviews, the majority of FTMs and FTFs expressed that the key messages from the PNC sessions were complications among FTMs and warning signs for the newborn complications. Most respondents recalled learning about warning signs of umbilical infection, seizures, and breathing difficulties and that baby need to be taken to the hospital in such cases. An FTF who attended both GPNC sessions noted in a FGD that, *“They (midwives at the sessions) talked about how to recognize if my child is in danger and when to bring the child to them (health facility). I learned the danger signs for the baby, such as baby’s umbilical area is red and swollen, have seizures, and fever.”* A FTM in a FGD said, *“I learned that if the baby’s umbilicus is swollen, or if there is phlegm or cough, or difficulty in breastfeeding, take baby to the doctor immediately. ...They also talked about when the baby should get vaccinations, how often they should be fed... Mothers need to breastfeed, and after six months, we should give the child weaning foods.”*

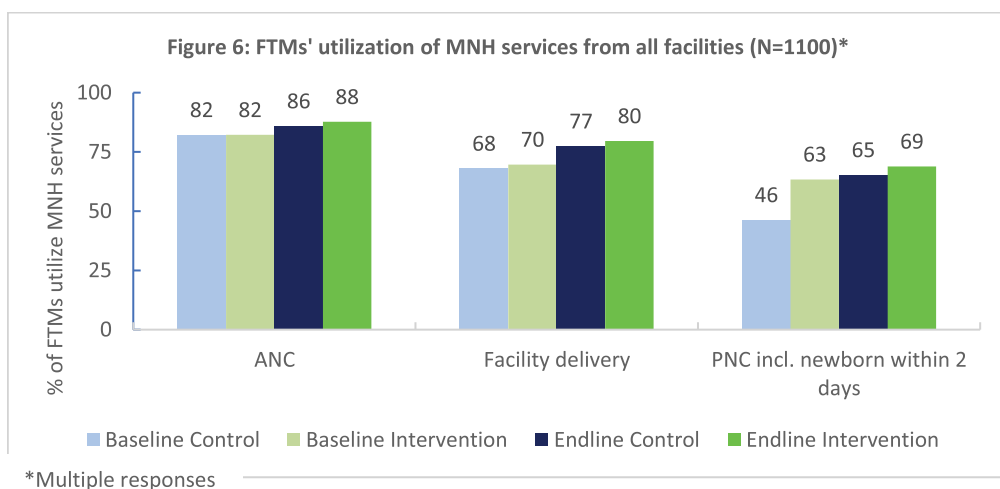


Overall, findings suggest that the GANC-GPNC sessions were effective in improving FTMs’ knowledge on multiple potential complications during pregnancy, delivery, and the postnatal period.

### Behavioral changes

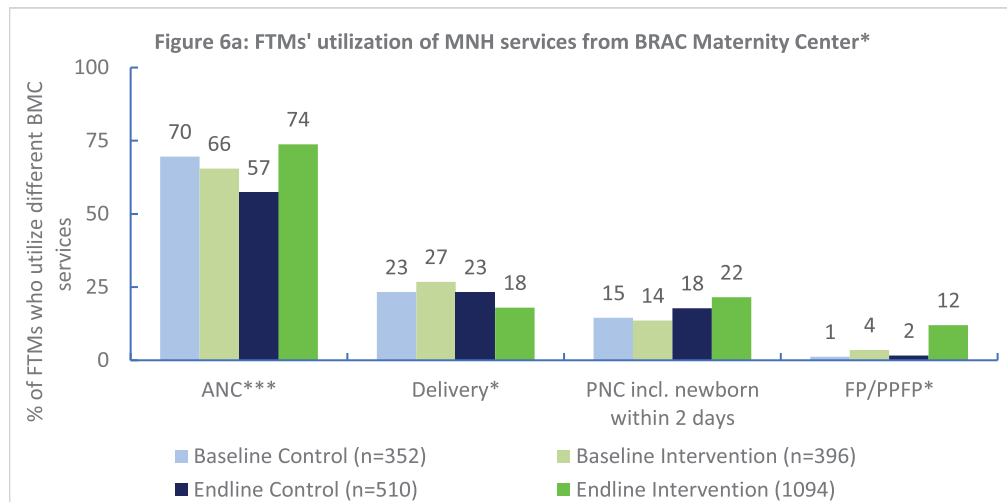
#### Uptake of ANC, delivery, PNC, PFP and neonatal health services from all facilities and BMCs

Figure 6 shows the different services that FTMs received from all facilities, including BMCs. Overall, GANC-GPNC had a positive impact on the use of maternity and neonatal health services provided by BMCs. Figure 6a shows that ANC and PFP utilization have significantly increased, and PNC, including newborn health marginally increased in the intervention group compared to the control group over time in BMCs (except delivery services),



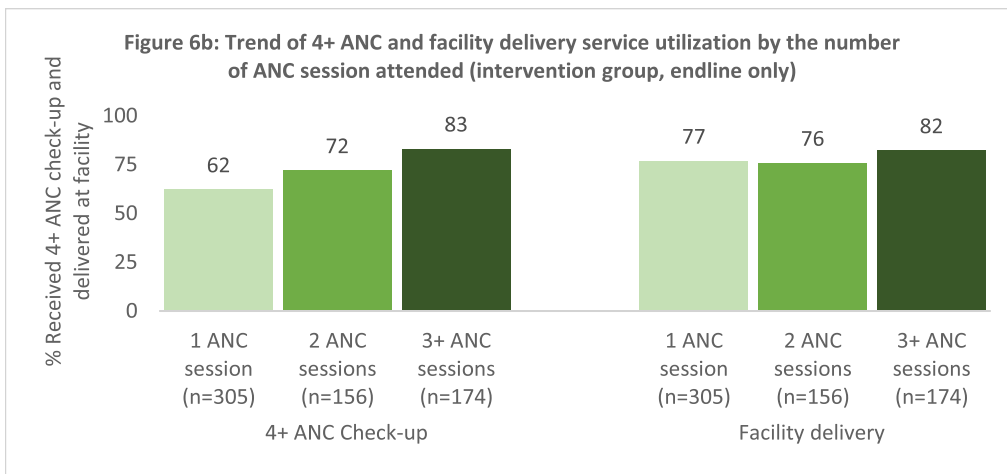
as indicated by the DiDs and p values. For example, at baseline 70 percent of FTMs in the control group and 66 percent in the intervention group sought ANC services from BMCs. By the endline, ANC service use increased significantly in the intervention group to 74 percent compared to 57 percent in the control group, resulting in a DiD of 21 percent ( $p < 0.001$ ). Although the overall facility delivery increased in the intervention area from 70 percent at the baseline to 80 percent at the endline (Figure 6), the use of delivery services from BMCs decreased significantly ( $\text{DiD} = -9$  percent,  $p = 0.011$ ) in the intervention group by the endline compared to the control group, which may be due to the stopping of deliveries at the BMCs (Figure 6a).

Overall, the increasing number of GANC sessions had a positive impact on the use of maternity health services provided by BMCs, particularly ANC and delivery services. Figure 6b shows the increasing trend of 4+ ANC utilization and facility delivery by the number of GANC sessions attended. Of the FTMs who attended only one GANC session, 62 percent received 4+ ANC, while 72 percent and 83 percent of the FTMs, who attended 2 ANCs and 3+ ANCs sessions, respectively, received 4+ ANC. There were similar findings regarding facility delivery although there is a slight decrease among those who attended 2 ANCs sessions (Figure 6b).



\*Multiple responses, \*DiD  $p < 0.05$ , \*\*\*DiD  $p < 0.001$

Qualitative interviews also suggest a positive influence of group sessions on decisions to deliver at health facilities. It shows the positive impact of intervention, and some respondents reported that they have changed their decision of home delivery at villages. A FTF in an IDI said, *“Initially, we planned that she (pregnant wife) would stay at my father-in-law's house and deliver there (village). As I attended these group meetings, I realized my previous thoughts were completely wrong. Seeking healthcare services, consulting with doctors, and receiving medical care would all be beneficial. So later I kept her with me and delivered to a facility finally.”*



### Birth Preparedness

Data indicates that the intervention significantly enhanced birth preparedness among all FTMs.

Regarding the four elements of birth preparedness, there were significant improvements in the percentage of FTMs completing all four birth preparedness elements (selecting a delivery place, arranging blood donors, saving money for delivery, and identifying transportation) in the intervention group, from 22 percent at the baseline to 62 percent at the endline ( $p < 0.001$ ) with a significant DiD of 17 percent ( $p = 0.001$ ) (Table 13 in the full report) [6].

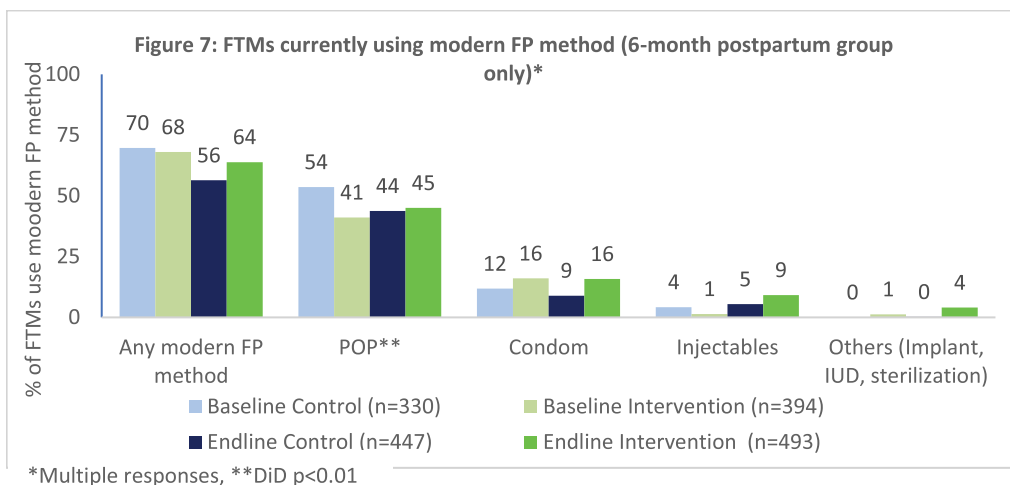
From quantitative analysis we found that the GANC-PNC intervention significantly enhanced birth preparedness among FTMs, particularly in selecting a delivery place, arranging blood donors, and identifying transportation. A FTM in a FGD said, *“In the group sessions, they (midwives) talked about saving money and arranging transportation. Because of what was said here, many people now save money cautiously. They (midwives) also suggested arranging a driver in advance.”*

### Postpartum family planning

At baseline, 70 percent FTMs in the control group and 68 percent in the intervention group and at the endline, 56 percent of the FTMs in the control group and 64 percent FTMs in the intervention group used any modern FP method during the 6-month postpartum period (Figure 7). Analysis showed that although the overall rate of modern FP method use decreased, the use of any modern FP method during the 6-month postpartum period in the intervention group increased compared to the control group, which was approaching significant level of increase ( $\text{DiD} = 9$  percent,  $p = 0.052$ ). The use of any modern FP method during the 6-month postpartum period slightly increased in the intervention group with use of the progesterone-only-pill (POP). For example, 54 percent of FTMs in the control group and 41 percent in the intervention group at baseline used POP ( $p = 0.001$ ), while 44 percent in the control group and 45 percent in the intervention group at

the endline (p=0.716) used POP, resulting in a significant DiD of 14 percent (p=0.005) (Figure 7 and Table 2e in the full report) [6].

Qualitative interviews in the endline survey demonstrated that awareness of FTMs and FTFs regarding birth spacing and use of PFP increased because of the intervention. A perception prevailed in the community that breastfeeding gives full protection for next pregnancy and the need for PFP was often overlooked. Critical information was shared about PFP in group PNC sessions and the type of PFP methods can be used during breastfeeding and beyond. It was also found that couples discussed PFP and took mutual decisions.



An FTF in a FGD said, “At one point, I was a bit negligent about using these methods (PFP). But after coming here at the session and hearing about how these things work, I had increased understanding of its importance... spacing between pregnancies is crucial.” Another FTM in a FGD said, “I learned about family planning, such as taking pills after 42 days, using condoms, or getting injections. You need to take the pill whether you are menstruating or not. I didn’t know that before.” A FTF during an IDI said, “I must discuss it with her (wife). .... see, both of us attended the sessions. So, we both learned about the benefits and drawbacks of the gap between having one child and the next. We understood that this was the right thing to do. My wife took an injection. We have made this decision with the consent of both of us. It’s our mutual understanding.”

### Quality of care at BMCs

Findings suggest that the GANC-GPNC intervention has had a positive and substantial impact on the quality of ANC, delivery, and PNC services provided. The overall quality of ANC services using a composite score indicates a substantial reduction in the proportion of participants receiving low-quality services in the intervention group, from 45 percent at baseline to 9 percent at endline (DiD= -26 percent, p<0.001). Conversely, the proportion of those receiving high-quality ANC services increased from 55 percent at the baseline to 91 percent at the endline in the intervention group (DiD=26 percent, p<0.001) (Table 4 in the full report) [6].

Almost 100 percent of the FTMs received high-quality delivery service in the control and intervention group at the baseline and the endline (Table 7 in the full report) [6]. The proportion of those receiving high-quality PNC services increased from 56 percent at the baseline to 90 percent at the endline in the intervention group (DiD=28 percent, p<0.003) (Table 8 in the full report) [6].

A similar perception about the quality of BMC services was also revealed from the qualitative interviews. A FTM in a FGD shared, “We had physical checkups. They check our blood pressure and blood sugar. They also check the baby’s heartbeat. They did diabetes tests, urine tests, and blood tests; but if anyone feels there is a problem, they can come for a checkup [for] whatever they need to. For example, they can see a doctor, have an ultrasound, or have a checkup. With sessions, we got one free checkup. We had to pay for the ultrasound once.”

### Respectful maternity care (RMC) and satisfaction with care

Findings indicate that the intervention significantly enhanced respectful care provided to women during maternity services at BMCs, as evidenced by improvements across multiple elements of RMC (a composite score was used to measure RMC), including emotional support, communication, consent practices, and overall patient satisfaction during ANC, PNC and FP service. For example, looking at ANC services, the proportion of women with a low RMC score decreased significantly in the intervention group from 40 percent to 9 percent, with a DiD of -22 percent (p<0.001), while those with a high RMC score increased from 60 percent to 91 percent, showing a DiD of 22 percent (p<0.001). Similarly, satisfaction with ANC services, including RMC, improved significantly in the intervention group, rising from 43 percent at baseline to 77 percent at the endline (p=0.006\*) (Table 12 in the full report) [6]. The qualitative results support this finding. A FTM in an IDI said, “The midwives’ mannerisms are very nice. I would like to mention their cooperation and other things. [She] Speaks pleasantly. This is satisfying...and based on what I’m hearing from them, I know that they are content as well.” Similar respectful care and satisfaction were also revealed for PNC and FP service provisions (Table 12a and Table 12b in the full report) [6].



## Peer learning and confidence

In the qualitative interviews most FTMs said that they enjoyed meeting their peers in the group, valued the opportunity to learn from others and mentioned how it was the most attractive part of the group sessions. Participants also expressed that they identified with peers who were in a similar journey of parenthood which created bonds and gave them confidence. A FTM in a IDI mentioned, *“I enjoyed meeting everyone and chatting with other pregnant women. It is a benefit knowing different things together; and able to share them with others.”*

A FTF in a FGD mentioned, *“This was my first child, so I had no previous experience. These group meetings helped me to prepare and plan for potential problems in advance. Many types of situations I can now handle. The experiences and knowledge gained from these meetings were invaluable, and they have significantly improved my ability to manage family matters.”*

## Social support and couple communication

Qualitative interviews with FTMs and FTFs revealed that the GANC-PNC intervention facilitated social connectedness and provided a sense of support and confidence. Respondents and service providers also reflected on trusted relationship built among the service

providers/midwives and FTMs through GANC-PNC sessions and that it was very supportive and rewarding. A FTF in a FGD mentioned, *“We fathers meet in a group and shared a lot of things, and we learned a lot from each other’s experience. That gave a mental support and confidence.”*



Qualitative interviews with FTMs and FTFs also demonstrated that husbands were more sensitized about taking care of and supporting their partners. A FTF in an IDI said, *“In the session, they encouraged to take more care of the wife, to talk happily with the wife, and to occasionally take her out. Then there’s discussion about providing nutritious food. They mentioned about eating green vegetables and small river fish, milk, and eggs.”* Interviews also demonstrated that couples commonly discussed choosing a doctor and health facility, physical checkups for mother and baby, and medications and took decisions together. Another FTM in an IDI said, *“I usually told*

*him (husband) what was discussed in the group session. During our conversations, we talked about handling finances, deciding which hospital to go to, and who would accompany me. If there’s any medication needed, he (husband) took care of arranging it.”*

## Limitations

There were several limitations in this study. Firstly, there were not enough FTMs less than 18 years of age to allow a separate analysis for that group. One reason for not identifying married women under 18 is that these women may not wish to divulge their true age because of legal restrictions. In addition, the sample size of those who received ANC, PNC, and delivery services from BMC was small, so the findings and the significance levels need to be interpreted with caution. Additionally, with the skip logic in use, some of the composite scores were calculated using a smaller sample size, which may limit the power of probability of making a correct decision on a particular variable. These findings should be interpreted with caution and cannot be generalized. Another limitation is that only a limited number of FTMs attended all GANC and GPNC sessions, which also limits analysis for some variables. The study was conducted with women who recently delivered (within the previous 12 months), and there was potential for recall bias for some questions, particularly on quality of care of ANC, delivery, and PNC. Social desirability and custom bias may also affect how some mothers report the service as a positive experience. However, women were given the freedom to tell the truth and assured that their answers would not affect receiving services from the health facility.

## Conclusions and recommendations

The findings of the study indicate that the implementation of GANC and GPNC is feasible and effective in improving knowledge and use of MNH services. Changes in the baseline and endline assessments findings over time showed improvements across FTM’s knowledge of dangers signs during pregnancy, delivery, and postnatal period in the intervention group. Significant improvements have been shown in the utilization of various services and the quality of services at ANC, delivery, PNC and PPFP at BMCs among FTMs in the intervention group. Notable improvement in completing all four key elements of birth preparedness was also found among all FTMs and FTFs in the intervention group, which indicates that they gained a more comprehensive approach to planning for childbirth. Additionally, compared to the national levels, the uptake of services is higher [5]. However, the attendance of FTMs and FTFs in all GANC and GPNC sessions was not at the expected level, which suggests that future iterations of the program should review the content and format of GANC and GPNC sessions to maximize participation and ensure that all FTMs benefit from the session contents. The following recommendations are drawn from the evaluation findings:



- **Scale up the model in other areas:** The tested GANC-GPNC model demonstrated improved knowledge, and utilization of services for pregnant women and was widely accepted among the first-time parents. While replicating the model in other areas is recommended,

the assessment also identified features that would need flexibility and to be tailored to the context in which the model is implemented. This combination of standard and flexible components is key when planning and designing for implementation across low- and middle-income country (LMIC) settings and scale up. The study findings strongly recommend scaling up in government facilities or other types of health facilities so that expectant parents can benefit from the model.

- **Revisit some of the components of group sessions:** The number of group sessions, session content, session time, and/or the modality of engagement need to be reviewed to ensure maximum participation and benefits. Additionally, strategies need to be identified and tested on how FTF's participation can be ensured and maximized.
- **Testing in government facilities:** The GANC-GPNC model holds promise for all mothers in government setting for better meeting social support and informational needs and for improving the quality and uptakes of ANC, PNC and delivery care at facilities in resource-poor settings like Bangladesh. The GANC-GPNC model has been implemented and leverages BRAC's existing models and programming in NGO settings which is different from government settings. The next step would be to test it in government settings and adapt as needed to maximize the beneficial effects of the model.



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