Bring a Friend

Strengthening Women's Social Networks and Reproductive Autonomy in India

S Anukriti
Catalina Herrera-Almanza
Mahesh Karra

Abstract

This paper experimentally tests whether enabling individuals to incentivize others to socialize with them can strengthen social networks and improve well-being. The paper examines family planning access for women in India, who tend to be socially isolated and for whom peer support may overcome intrahousehold constraints. Enabling women to jointly visit a clinic with other women not only increased social ties and strengthened peer engagement, but also increased clinic visits and contraceptive use. Moreover, this intervention was more effective in improving reproductive autonomy of women who faced greater intrahousehold opposition than an intervention that only improved women's own access to the clinic.

Bring a Friend: Strengthening Women's Social Networks and Reproductive Autonomy in India[*]

S Anukriti

The World Bank[†]

Catalina Herrera-Almanza

University of Illinois at Urbana-Champaign[‡]

Mahesh Karra

Boston University[§]

1 Introduction

Social networks are a key ingredient in the process of economic development (Breza, 2016; Munshi, 2014). A relatively large literature has established that social networks influence individual behavior and outcomes in myriad ways.[1] The factors that drive network formation and peer engagement, therefore, are of fundamental importance to researchers and policy makers alike. An emerging literature has shown that changes in the economic environment can have unintended and, often negative, impacts on social networks (Banerjee et al., 2020; Binzel et al., 2013; Comola and Prina, 2021; Feigenberg et al., 2013; Heß et al., 2021). However, the bulk of this literature has focused on social interactions in the context of microfinance groups, and, to date, relatively little is known about how social networks can be expanded and leveraged to achieve specific impacts in other domains (Diaz-Martin et al., 2021).

We experimentally evaluate a novel intervention that utilizes financial incentives to expand social networks and strengthen social ties and, in turn, improve well-being. We focus on women in rural India, a population that not only tends to be socially isolated relative to other women,[2] (Andrew et al., 2020; Anukriti et al., 2020; Gallup, 2004; Kandpal and Baylis, 2019), but also for whom peer support may be especially valuable. Specifically, we examine women's networks and well-being in the domain of family planning (FP) and reproductive health (RH) where peers can help women overcome intrahousehold and social constraints (Igras et al., 2021; LeMasters et al., 2021; Montgomery and Casterline, 1996).

Our sample is comprised of 671 married women aged 18-30 from 28 villages of Jaunpur district in India's most populous state, Uttar Pradesh. Women in our sample have a high unmet demand for modern contraception and low utilization of FP services at baseline. While 50 percent of women reported not wanting to conceive another child, only 18 percent reported using modern contraception, and 65 percent of women had never visited a clinic for FP.[3] The lack of uptake is not due to a lack of awareness among women about FP and persists despite significant improvements to FP service provision in recent decades (Halli et al., 2019), indicating the presence of other barriers to FP access and uptake.

Previous research has highlighted mobility constraints (Khan, 1999) and intrahousehold discordance in fertility and FP preferences (Ashraf et al., 2014) as key factors that prevent

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[1]For instance, networks transmit information (Beaman et al., 2021; Behrman et al., 2002; Kohler et al., 2007; Munshi and Rosenzweig, 2016; Oster and Thornton, 2012), are a source of informal credit and insurance (Fafchamps and Lund, 2003; Townsend, 1994), enable collective action and political participation (Prillaman, 2021; Sanyal, 2009)), and support entrepreneurship and migration (Field et al., 2016; Munshi, 2020)), which, in turn, can contribute to economic and social development.

[2]This is likely because women in India have restricted access to places outside the home, have low financial autonomy (NFHS, 2016), have extremely low engagement with the labor market (ILO, 2021), have limited engagement with women's groups (Desai and Vanneman, 2015), and are constrained in their access to mobile phones and digital financial services (Barboni et al., 2018).

[3]Globally, 214 million women of reproductive age in developing countries had an unmet need for contraception in 2018 (Kantorová et al., 2020; United Nations, 2018).

women from accessing FP services freely and independently.[4] Women's social connections may be especially critical to overcoming these barriers related to physically accessing FP for women who are not permitted to, or want to, visit health centers alone, and whose family members may be unwilling to accompany them to clinics because they are opposed to women's FP use.[5]

However, our sample women lack social connections and have limited engagement with existing peers. At baseline, nearly 36 percent of our sample reported speaking to only their husbands and mothers-in-law about issues related to FP-RH; an average woman in our sample reported interacting with less than one other individual besides her husband and mother-in-law in her village. Women living in households characterized by discordance in fertility preferences may be doubly disadvantaged if their social network access itself is constrained by those very same preference-discordant family members, like mothers-in-law.[6] Indeed, the lack of social connections is a salient barrier for any intervention that requires women to "cross the boundary" in contexts where their physical mobility is constrained (Jayachandran, 2021) by household members or social norms.[7]

With these considerations in mind, we conducted a 10-month-long randomized controlled trial that enabled women to incentivize other women to socialize with them to form new social connections, strengthen peer engagement, and improve their reproductive autonomy by lowering dependence on influential household members, such as mothers-in-law and husbands.[8] We provided a randomly selected group of women in our sample a voucher package for subsidized FP services at a local clinic for their own use ***as well as*** for any peers other than their husbands who accompanied them to the clinic at least once ("Bring-a-Friend (BAF)" voucher group). To separately identify the additional effect of enabling women to seek peer support from the effect of having a voucher for one's own use, a randomly selected group of women were provided the voucher package only for their own use and not for their peers ("Own" voucher group). The remaining sample was assigned to the control group and did not receive the voucher package.[9]

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[4]In our sample, 56 percent of women at baseline reported not being allowed to visit a health facility alone and 44 percent of women reported having no say in decisions about their health care. Moreover, 75 percent of women reported misalignment in their fertility preferences with respect to their mothers-in-law (Anukriti et al., 2022), who typically want them to have more children than they desire.

[5]Women may prefer not to visit health clinics alone due to low confidence in interacting with health care providers and concerns about safety.

[6]Discordant mothers-in-law may strategically curtail their daughter-in-law's ability to form peer connections to prevent outside influences from affecting the daughter-in-law's fertility outcomes in ways that potentially deviate from the mother-in-law's preferences (Anukriti et al., 2020).

[7]Based on data from 52 developing countries, Klugman et al. (2014) document that physical mobility barriers are widespread, especially among younger adult women, and can have detrimental effects on women's opportunities and choices.

[8]Reproductive autonomy is defined as having the power to decide and control contraceptive use, pregnancy, and childbearing (Purdy, 2006; Upadhyay et al., 2014).

[9]The voucher package that was received by treated women comprised one free FP consultation, a voucher worth INR 2,000 (USD 28) for FP services, and reimbursements for transportation to visit the clinic.

Essentially, our intervention equipped women in the BAF voucher group to incentivize other women to accompany them to the clinic by offering them their own vouchers in exchange for a joint visit. Although our analysis reports impacts by each intervention arm separately, we are particularly interested in the comparison of outcomes between the Own and BAF voucher groups, which isolates the effect of inducing peer engagement and support by holding financial empowerment constant.[10]

Our analysis produces three key findings. First, both vouchers significantly increased women's likelihood of visiting a clinic for FP services overall as well as without their husbands or mothers-in-law (i.e., either alone or with female peers), relative to control women. Moreover, the BAF voucher was significantly more effective than the Own voucher—in increasing clinic visits overall and those without husbands or mothers-in-law—for women who faced greater opposition to FP use from their mothers-in-law at baseline. In fact, the Own voucher was ineffective in increasing clinic visits for women whose mothers-in-law were opposed to their FP use at baseline. This suggests that the peer support facilitated by BAF vouchers enabled women to overcome resistance from their mothers-in-law to FP use.

Second, modern contraceptive use increased by 56 percent for both voucher groups relative to the control group. However, only the BAF voucher significantly increased modern method use for women who faced social barriers to FP use at baseline, including women who reported concealability of an FP method to be important and women who were embarrassed to use FP at baseline. We rule out any unintended backlash effects on treated women in response to increased FP use, even in households where husbands or mothers-in-law were opposed to FP (Ashraf et al., 2014).

Third, the BAF voucher expanded women's social networks. Specifically, a woman's number of close peers in the village increased by 21 percent for the BAF group relative to the control group and significantly more so than the Own voucher group.[11] In addition, the BAF voucher enhanced women's FP-related engagement with their close peers. Women in the BAF group were more likely to have at least one close peer in their village who had accompanied them to a health facility and who had advised them to use FP relative to women in both the control and Own voucher groups. Furthermore, the impact of the BAF voucher (relative to the Own voucher) on FP-related peer engagement was more substantial for women who faced stronger opposition to FP use from their mothers-in-law at baseline. Most notably, the effect on women's social network expansion is driven by BAF women who potentially had a stronger "need" for new peers because none of their existing peers were FP users at baseline—the number of close peers in the village increased by 67 percent for such women.

The reduction in women's social isolation that resulted from our interventions also gener-

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[10]Having access to a voucher for own use can be financially empowering for women who are otherwise dependent on their husbands or other family members for financial support.

[11]We define a woman's close peers as the individuals with whom she discusses FP-RH-related issues.

ated additional benefits for treated women. The BAF voucher reduced women's fear of stigma related to FP use by 38 percent relative to control women; the Own voucher had no such impact. This finding is consistent with previous research showing that peer support can decrease stigma around health outcomes (Burke et al., 2019; Castro and Mang, 2022).

Taken together, our results suggest that although offering women a voucher for their own use, a commonly used policy tool (Ashraf et al., 2014; Athey et al., 2021; Bellows et al., 2015; Karra and Zhang, 2021), may improve women's FP outcomes on average, such an intervention may be ineffective for women who are socially isolated, mobility constrained, and face intrahousehold opposition to FP use.[12] Only when we combine a voucher for a woman's own use with a voucher that encourages a woman's peers to participate do we observe improvements in FP outcomes for socially constrained women. Moreover, enabling women to incentivize other women to accompany them to the clinic also expands the social networks of socially isolated women. These financial incentives for peers also confer other peer-induced benefits, such as a reduction in a woman's fear of stigma, and potentially may extend to other benefits that are beyond the scope of this study, including improvements in mental health and life satisfaction.

Our results are consistent with recent studies showing that female peers can empower women (Field et al., 2016; Kandpal and Baylis, 2019). Although interventions, such as organizing women into groups (e.g., Kumar et al. (2019)), have been used to strengthen women's social networks, only 20 percent of Indian women are members of such groups (Desai and Vanneman, 2015). Moreover, as argued by Diaz-Martin et al. (2021), improving social connections is only a hypothesized benefit of women's groups that is insufficiently supported by quantitative evidence, highlighting the need for other innovative approaches. To our knowledge, no other study has tested whether the social networks of relatively isolated women can be expanded by enabling them to build new connections by offering other women financial incentives, especially in the context of FP-RH.[13]

Our work also contributes to the literature on intrahousehold bargaining. Across the globe, women continue to have constrained access to economic opportunities, services, and public spaces due to restrictive gender norms, e.g., Bernhardt et al. (2018); Bursztyn and Jensen (2017); Jayachandran (2015); Olivetti and Petrongolo (2016). In our context, women's inability to access FP clinics is partly driven by social norms that prevent women from "crossing the

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[12]Vouchers have also been used to improve women's outcomes in other domains, such as employment (Clark et al., 2019), experience of intimate partner violence (Hidrobo et al., 2016), land ownership (Ali et al., 2016), and skills training (Cheema et al., 2019).

[13]Our paper is also related to the increasing number of studies that have documented peer effects in the use of health technologies, e.g., Godlonton and Thornton (2012); Goldberg et al. (2018); Miguel and Kremer (2003); Oster and Thornton (2012); Sato and Takasaki (2018)). We add to this literature by examining contraceptive use, which is both a more private health behavior relative to most other behaviors (e.g., immunization) as well as a more gendered health behavior due to its link to fertility and maternal health, where the majority of contraceptive users are female.

boundary," which governs their (lack of) access to public spaces alone as well as their social interactions with individuals outside the household, similar to the Pakistani context examined in Cheema et al. (2019). Our BAF voucher intervention addresses these mobility barriers not by changing the social norm (although we observe a small but significant increase in women's ability to visit clinics alone), but by enabling women to "bypass" these normative conditions by visiting clinics with their female peers, who may be less likely to constrain their choices than husbands or mothers-in-law.

Finally, prior research based on collective models of the household (Chiappori and Maz-zocco, 2017) has mainly focused on spousal interactions, particularly when examining fertility and FP decisions (e.g., Ashraf et al. (2014); McCarthy (2019)). However, a growing body of work in economics (Anukriti et al., 2020; Gupta et al., 2021; Khanna et al., 2015; McKel-way, 2020) and a large literature in other disciplines has emphasized the importance of other household members, such as the mother-in-law, in household decision-making (Gram et al., 2018; Rassam, 1980). Our study is unique in showing that vouchers and peer connections can be leveraged to improve women's reproductive autonomy by overcoming the constraints imposed by mothers-in-law in patrilocal societies.

2 Experimental Design and Data

In this section, we describe our study sample, the experimental design, the interventions that were implemented as part of the randomized experiment, the data, and the landscape of FP service provision in our study area.

2.1 Sample

Our study is based in 28 villages of Jaunpur district in the state of Uttar Pradesh (Figure A.1). According to the 2015-16 Demographic and Health Survey (DHS) of India, the total fertility rate in rural Uttar Pradesh (3.8) is high relative to other states; 20 percent of women have an unmet need for FP;[14] and the share of demand satisfied by modern methods is only 47 percent. Therefore, our intervention is highly relevant for this context.

Figure A.2 describes our sample selection process. We began by conducting a listing exercise for all households (N = 2,781) that were located within a 10-kilometer radius of our partner clinic, the Arogyaneer Diagnostic Clinic (ADC), situated in the village of Chandwak. The ADC was chosen based on its proximity to our sample women (many of whom lived in Chandwak), more reliable supply of a wide range of FP methods, and higher quality of service, relative to other clinics in the area. A total of 698 households were identified to have

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[14]These statistics from the 2015-16 DHS calculate unmet need for FP as the proportion of women who: (1) are not pregnant and not postpartum amenorrhoeic, are considered fecund, and want to either postpone their next birth for two or more years or stop childbearing altogether, but are not using a contraceptive method; (2) have a mistimed or unwanted current pregnancy; or (3) are postpartum amenorrhoeic and their last birth in the last two years was mistimed or unwanted (NFHS, 2016).

at least one eligible woman, i.e., a married woman aged 18-30 who (i) had at least one living child, (ii) was neither sterilized nor had undergone a hysterectomy, and (iii) was neither currently pregnant nor within six months postpartum. These inclusion criteria were selected to identify a sample of young married women of reproductive age with a potential unmet need of FP and for whom an FP intervention, such as ours, would likely be effective.[15] We enrolled no more than one woman per household. If multiple women from the same household were eligible based on the inclusion criteria mentioned above, the youngest eligible woman from the household was chosen to participate. From 698 women who were invited to participate in the study, 671 consented and were recruited. Figure A.3 presents the map of our intervention site and study sample.

2.2 Experimental Design

Figure 1 presents our experimental design. The experiment consisted of a baseline survey, followed by randomization of women into one of three intervention arms, a 10-month long intervention, and an endline survey. All communication with the study sample occurred in Hindi, the local language. The baseline survey was administered by female enumerators during July and August 2018 to 671 women. To address information gaps on FP among our sample women, a brochure on modern FP methods and the benefits of healthy timing and spacing of births was given to all sample women at the conclusion of the baseline survey (Figure A.4).

Soon after completion of the baseline survey, we conducted individual-level randomization to assign 350 women to the control group, 156 women to the Own voucher group, and 165 women to the BAF voucher group. Following Bruhn and McKenzie (2009), we implemented a stratified randomization protocol by balancing treatment assignment according to the following baseline characteristics of a woman: village of residence, current use of FP, years of schooling, desire for another child, and the number of peers mentioned by her as part of our social networks module. Tables 1 and A.1 show that treatment assignment was balanced across a range of baseline characteristics of the woman including her age, religion, number of children, whether she had at least one son, marital duration, co-residence with the mother-in-law, number of close peers in the village, contraceptive use, beliefs about her mother-in-law's opposition to FP use, household asset score,[16] and whether her last visit to an FP clinic was with her husband or mother-in-law.[17] We observe some differences across groups in the mo-

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[15]We excluded married women who had not begun childbearing from our study due to the presence of cultural norms that pressurize newly married couples to prove their fertility as soon as possible after marriage before considering FP (Jejeebhoy et al., 2014).

[16]We construct the household asset score using a principal component analysis with the following variables: source of drinking water, type of toilet facility, floor material, roof material, exterior wall material, type of fuel used for cooking, ownership of animals, number of rooms in the household used to sleep.

[17]Randomization was also balanced across several other variables, such as the Below Poverty Line (BPL) status of and the amount of land owned by the household, whether the woman gave birth last year, her husband's migration status, the woman's decision-making ability, the distance from a woman's home to the ADC and to the closest clinic located in the study area.

bility score,[18] whether a woman belongs to an Other Backward Class, and the proportion of women who worked at baseline, so we control for these variables in all regressions. Moreover, the joint F-statistics in Tables 1 and A.1 show that the pairwise differences between the three intervention groups are jointly insignificant.

Following randomization, female enumerators revisited women who were assigned to the treatment groups. Enumerators were divided into two teams, one for each treatment group, to prevent an enumerator from, either deliberately or mistakenly, handing out an incorrect voucher to a woman who had been assigned to the other treatment group. During this second visit to the treatment women, the enumerators explained the terms and conditions of the intervention and confirmed women's consent to participate in the intervention.[19] No woman refused to accept the voucher; however, 14 treatment women (8 Own voucher and 6 BAF voucher) could not be re-contacted following baseline and therefore did not receive the voucher.[20]

2.3 Interventions

Women in both treatment groups were provided a voucher for INR 2,000 (USD 28) that could be used to obtain FP services at the ADC over a period of 10 months from the date of voucher receipt. At the time of our study, a voucher worth INR 2,000 translated into different proportional discounts depending on the type of FP method that was procured. For instance, if a woman chose to purchase birth control pills or condoms, the voucher constituted a 100 percent discount on the total cost for these methods over the 10-month period. The voucher could be used for any contraceptive-related services that were offered by the ADC. The voucher was designed to resemble an identification card and was personalized for each woman with her name and photograph printed on it. In addition, the first consultation at the clinic, during which time a woman was evaluated to determine if she was medically fit to use FP, was provided for free to all voucher recipients. All voucher recipients were also informed that they would be provided with INR 40 (USD 0.50) as a reimbursement for any transportation expenses that they may incur to travel to the ADC. No receipts were required to receive this reimbursement. The transportation reimbursement was restricted to a maximum of three trips (for a total of INR 120 in reimbursement costs) for any woman over the course of the intervention period.

Women assigned to the BAF voucher group were additionally informed that if they are accompanied by peers to the ADC, these peers, during their first joint visit with her, would be

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[18]The composite mobility score is calculated as the sum of six indicator variables that captures whether a woman is allowed to visit the following places alone: 1) homes of relatives or friends; 2) health facilities; 3) grocery stores; 4) short distances by bus or train; 5) markets; or 6) outside their villages or communities.

[19]Women assigned to the intervention arms were told that they were free to withdraw their participation from any intervention activity at any time and also could rejoin at any time over the 10-month intervention period without any penalty.

[20]Out of these 14 women, 4 women were also unreachable at the time of endline data collection—thus, among the sub-sample that we did re-interview at endline, 10 treated women (6 Own and 4 BAF voucher women) did not receive the vouchers as intended.

provided with their own voucher package for FP services. BAF voucher women were allowed to bring anyone with them, but since the voucher could only be used for FP, they were encouraged to bring someone who could make use of FP services. BAF voucher women could bring up to two peers during any given visit and they could bring different peers or the same peers on subsequent visits. During their first visit to the clinic with a BAF voucher woman, her peers were provided with their own vouchers and identification cards by one of the field managers who was stationed at the ADC to receive clients; thereafter, they could visit the clinic with or without the BAF voucher woman. There was no restriction on the total number of unique peers a BAF voucher woman could bring to the clinic over the 10-month period, as long as she did not bring more than two peers per visit. If a BAF woman came to the clinic with her husband, only one voucher could be used for the couple, and the existing FP operating procedure of the clinic for couples was followed. The intervention team made it clear that women could not apply two vouchers at once to increase the total discount. This ensured that a BAF-peer who herself also happened to be assigned to either the Own voucher or BAF voucher arms could not combine her own voucher with the peer discount.

The voucher package that peers of a BAF woman received when they accompanied her to the clinic is essentially equivalent to the Own voucher package. Specifically, peers of a BAF woman were not entitled to receive additional vouchers for their other peers. Own voucher women were also free to bring peer(s) with them to the clinic if they chose; however, they were not actively encouraged to do so by the study team and any peers who accompanied them to the clinic were not provided a voucher unless they had their own voucher.

At the end of the 10-month intervention period, 625 women (93.2 percent of the baseline sample) were re-interviewed either in person or via phone for the endline survey.[21] Figure 1 provides details on the reasons for attrition. Table A.2 shows that there are no significant differences between attritors and non-attritors in terms of treatment status and along a range of baseline characteristics that are relevant for the study. Although the joint F-statistic is also insignificant, at baseline, non-attritors were significantly more likely to report that their mothers-in-law were opposed to FP and were more likely to use an FP method than non-attritors.[22] The imbalance by mother-in-law opposition is less worrisome because it biases us against finding a positive effect on FP access and use. However, it is unclear whether the imbalance by baseline FP is likely to bias our estimates upward or downward.[23]

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[21]We conducted 18 percent of the endline surveys by phone mainly because some women could not be contacted at their recorded locations from baseline, either because they had moved or were visiting someone outside their homes. As per our protocol, we made up to three attempts to contact each woman at her home, after which we attempted to contact her by phone if she was not available. As Table A.3 shows, there are no observable differences in the baseline characteristics and treatment status between women who were surveyed in person or by phone at endline.

[22]Although our attrition rate is relatively low, we estimated Lee bounds for the treatment impacts and find that our main results are not driven by selective attrition. These results are available upon request.

[23]For instance, women who had previously used an FP method at baseline may be more likely to use our vouchers to switch from other providers to the ADC. However, such women may also be less likely to report

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The majority of treated women understood how the vouchers worked: at endline, 81 percent reported knowing about the transportation reimbursement; 67 percent knew about the free FP consultation; 76 percent knew about discounted FP services at the ADC; and only 4 percent of women incorrectly thought that child health services were covered by our intervention. To cross-check whether women understood the differences between vouchers, we asked treated women if the program enabled them to offer their friend(s) a voucher if they visited the ADC with them. While 74 percent of women in the BAF arm positively responded to this question, only 6 percent in the Own group did the same.[24]

2.4   Data

Our survey instruments collected data on household demographics and women's socioeconomic background, birth history, contraceptive use, marriage and sexual activity, fertility preferences, autonomy, social networks, and utilization of health services, including FP services. To map the social network of our sample, we asked each woman to name up to five individuals in the study area, besides her husband and mother-in-law, with whom she converses most often about any issue (e.g., financial support, health, child health, and schooling) that is important to her; we call these individuals her "general peers". In addition, we asked each woman to name up to five individuals in the study area, besides her husband and mother-in-law, with whom she discusses issues related to FP and reproductive health; we denote these individuals as her "close peers".[25] We then collected socioeconomic, demographic, FP-related, and network-related information (e.g., measures of trust and closeness) from the surveyed woman for each of her identified close peers. Since a woman's FP decisions may also be shaped by her husband, mother-in-law, and relatives outside the study area, we asked about her interactions related to FP with these key individuals and documented her beliefs about their attitudes towards fertility and FP. In this manner, we sought to capture each respondent's immediate social neighborhood and the network characteristics through which attitudes about fertility and FP are most likely to be shaped and spread. In the module on health services utilization, we asked each woman about her access to FP clinics, such as, whether she has visited an FP clinic and whether she goes to the FP clinic alone or with other individuals.

Tables 1 and A.1 provide context for the types of women included in our experiment. Our sample is comprised of young married women who, on average, were 25 years old and had nine years of schooling and 1.9 children at baseline. The sample is predominantly Hindu and comprises women from Scheduled Castes (SC), Other Backward Classes (OBC), and general

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an increase in contraceptive use if they were already using an FP method at baseline.

[24]All results in this paper are robust to the exclusion of treated women who did not understand how their voucher worked from the estimation sample. These results are available upon request.

[25]In both baseline and endline surveys, all participants reported fewer than five close peers. Thus, five appears to be an effective upper limit on network size in our sample and is unlikely to introduce downward bias due to top-coding (Chandrasekhar and Lewis, 2012).

or upper castes. Women have low autonomy and mobility. The mobility restrictions faced by the sample women are quite severe, as reflected in their extremely low composite mobility scores, which capture the number of places that a woman is allowed to visit alone. Only 14 percent of women worked in the last year; 90 percent practiced *ghunghat* or *purdah*; and 44 percent reported having no say in decisions over their health care. Furthermore, our sample women are socially isolated. An average woman has 1.6 general peers and only 0.2 close peers outside her home. Women who live with the mother-in-law (68 percent of our sample) tend to have even lower mobility and fewer social connections outside the home (Anukriti et al., 2020). The mobility constraints experienced by our sample women are more severe than those experienced by an average Indian woman.

2.5 Landscape of Family Planning Service Provision

Almost 70 percent of women in India, and 63 percent of women in rural Uttar Pradesh, who use modern contraceptive methods obtain them from a public sector provider or facility (GoI, 2017). The provision of FP services, including the procurement of contraceptive methods, in the public sector are subsidized by the national government, with the aim of achieving universal access to FP, particularly for rural and marginalized women (MOHFW, 2016). Outreach services by the public sector for FP are led by community health workers, such as Auxiliary Nurse Midwives (ANMs), Accredited Social Health Activists (ASHAs), and Anganwadi workers, who serve as a link for women to seek care at public health facilities.

In addition to the ADC, which was the only private facility in our study area, our sample women had access to 9 public facilities (3 primary health centers, 3 community health centers, and 3 hospitals) within a 10-kilometer radius of our enumeration areas. Our sample women, on average, lived 2.2 kilometers away from their nearest health facility at baseline, with 88 percent of women living within 5 kilometers from their nearest health facility. The ADC was the closest health facility for 46 percent of our sample, with the average distance being 2.4 kilometers. Among the 18 percent of our sample women that were using a modern method at baseline, 24 percent had obtained the method from a public health facility or provider; 11 percent had received it from a private provider, and the majority (54 percent) had received it from friends, relatives, or other local sources (pharmacies, drug stores). Male condoms were the most used modern method (60 percent of users), followed by the contraceptive pill (14 percent), and IUDs (13 percent).[26]

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[26]Kapoor et al. (2019) find substantial gender gaps in access to health care, with nearly 49 percent of the total female outpatient visits to a large referral public hospital in Delhi being "missing" from the states of Uttar Pradesh, Haryana, Delhi, and Bihar. Moreover, these gender gaps are larger for younger women in the reproductive age group.

3   Conceptual Framework

Before delving into the empirical analysis, we present a conceptual framework to describe the pathways through which our voucher interventions are likely to impact women. The most obvious way in which access to an FP voucher package for one's own use is expected to affect women is by directly lowering the monetary costs of visiting an FP clinic and using contraception, such as fees for FP services and methods, transportation costs, and opportunity costs. These financial barriers to FP access and use are likely to be especially important for women who belong to poorer households. The voucher may also enable a woman to bargain more effectively with and overcome opposition to FP use from family members, particularly those on whom she is dependent for financial or other reasons. As a result, we anticipate that our interventions will increase visits to our partner clinic as well as overall visits to an FP clinic by 1) encouraging women who may already be using FP to switch from other FP service providers to the ADC, and 2) encouraging new users to start using FP. The increase in clinic visits is, in turn, likely to translate into higher contraceptive use, and particularly the use of modern contraceptive methods that are available at our partner clinic, among treated women relative to control women.

However, in contexts such as ours, where women face significant mobility and social barriers in accessing health clinics, it is crucial to also consider the different ways in which the two types of vouchers (i.e., the Own and BAF vouchers) enable women to overcome or circumvent such barriers as they try to visit the ADC. To illustrate, upon receiving either voucher, a woman in need of FP services can either choose to visit the ADC alone or invite someone to visit the ADC with her. A treated woman who does not want to or is unable to visit the ADC alone can seek the company of her husband and/or her mother-in-law, or invite someone else, such as a sister-in-law or a female friend. Not only is it interesting to examine which of these options is chosen by which type of treated women, these intermediate outcomes can modify the eventual treatment impact on FP use and outcomes related to women's social networks.

We expect both vouchers to improve a woman's ability to visit the ADC alone equally; however, we note that most women at baseline preferred to visit FP clinics with someone due to low confidence, safety concerns, and fear of social stigma.[27] Consequently, we expect that most treated women who want to visit the ADC will seek company from a relative or a friend rather than visit the clinic alone. In this regard, the BAF voucher is expected to be more effective than the Own voucher in enabling a woman to invite someone other than her husband and mother-in-law to the clinic as only BAF women can offer their peers a voucher of their own as an incentive.[28] This extra feature of the BAF voucher is likely to be especially

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[27]Among women in our sample who usually do not visit health facilities alone, 59 percent mentioned concerns about safety, 28 percent cited lack of confidence, and 20 percent mentioned fear about community disapproval as the main reasons for not going alone at baseline.

[28]Given the highly gendered nature of social interactions in our setting, and particularly around matters

important for women who face stronger intrahousehold constraints to FP use at baseline, such as opposition from their mothers-in-law, as they are more in need of the company of someone besides their mothers-in-law to be able to visit the ADC for FP. Thus, we expect the BAF voucher to be more effective than the Own voucher for women who faced greater opposition from their mothers-in-law at baseline in increasing visits to the ADC (with female peers) and modern contraceptive use.

Any potential increase in engagement with other women prompted by the vouchers, especially the BAF voucher, may, in turn, strengthen women's existing social networks (if they invite existing female peers to visit the ADC with them) and expand their social networks (if they form new connections by offering BAF vouchers to women outside their baseline networks). These improvements in peer interactions resulting from the voucher may also lead to a decrease in women's fear of stigma associated with FP access and use (Burke et al., 2019; Jain et al., 2018).

We note, however, that the relevance of peers in the context of FP is *a priori* unclear. A woman in our setting would likely need to carefully reflect on the benefits and costs while deciding: 1) whether to rely on peers as part of her FP decision-making; and 2) the type(s) of peers whom she may solicit for support. Even if we assume that a woman is able to effectively screen and select peers whom she believes are supportive, these choices are not straightforward in the context of FP which is a more private, sensitive, and often stigmatized matter relative to even other health decisions.

Lastly, we expect the treatment effects on more "downstream" outcomes to attenuate as we move through the causal pathways described above. For example, it is plausible that after asking or inviting a peer, some treatment women or their invited peers are subsequently prohibited or dissuaded from going to the FP clinic by their household. Similarly, not everyone who visits the ADC may be able to use an FP method afterwards due to other factors such as a health issue or pregnancy that may be detected during the first visit to the ADC, or because they are unable to meet the doctor during their visit for some other reason.[29]

4 Empirical Strategy

Our experimental set-up allows us to estimate treatment effects by comparing women in the two voucher groups with those in the control group. We estimate the following Ordinary Least Squares regression to estimate the effect of receiving an Own or a BAF voucher, with one endline observation per woman:

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related to FP-RH (Anukriti et al., 2020), we expect women to offer the BAF voucher mainly to other women.

[29]In fact, nearly 24 percent of treated women who visited the ADC during the intervention period were unable to use a method after their visit due to a health issue or because they were found to be pregnant during their visit or for some other reason due to which the doctor did not recommend an FP method.

$$Y_{iv} = \alpha + \beta Own_{iv} + \theta BAF_{iv} + \gamma \mathbf{X}_{iv}^0 + \phi \mathbf{Z}_{iv}^0 + \delta_v + \epsilon_{iv} \tag{1}$$

Y_{iv} is an outcome variable measured at endline for woman i who lived in village v at baseline. Own_{iv} is an indicator variable that equals one if woman i randomly received a voucher only for herself, while BAF_{iv} is an indicator variable that equals one if the woman was randomized to receive a BAF voucher.

Although our randomization was balanced along a number of characteristics, as shown in Tables 1 and A.1, we include two sets of control variables in our main specification primarily to improve the precision of our estimates. The vector $\mathbf{X}_{iv}^0$ denotes the set of baseline variables that were used to balance treatment assignment—these include a woman's years of schooling, number of general peers, and indicators for current use of FP and desire for another child.[30] The vector $\mathbf{Z}_{iv}^0$ denotes a second set of baseline variables that can influence FP-RH-seeking behavior, such as woman's age, her composite mobility score, household asset index, and indicator variables for belonging to a SC or ST, belonging to an OBC, for being Hindu, for practicing ghunghat, for working last year, and for having ever visited an FP clinic.[31] We also include village fixed effects, δ_v, in our regressions to control for unobserved and time-invariant characteristics at the village level that may influence the outcomes of interest. However, as we show in the next section, our results are robust to the exclusion of baseline controls and village fixed effects.

We present estimates for treatment-on-the-treated (ToT) effects by dropping from our sample women who were assigned to a treatment group but who could not be reached at the time of voucher distribution.[32] The coefficients β and θ measure the impacts of receiving the Own voucher and the BAF voucher, respectively, on the outcome variable of interest. The difference between β and θ captures the additional effect of providing a woman vouchers for her companions, conditional on receiving a voucher for herself. We examine impacts on the following sets of pre-specified outcomes: (a) inviting peers to jointly visit the ADC, (b) clinic visits for FP services, (c) contraceptive use, (d) FP-RH-related social networks, and (e) fear of stigma related to FP use. Table A.4 provides descriptive statistics for the variables used in our analysis for the estimation sample.

We use robust standard errors for inference. Although our randomization is at the individual level, we confirm that our results are robust to clustering the standard errors by village to allow for correlated errors within village, reflecting, for instance, a common set

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[30]Kernan et al. (1999) and Bruhn and McKenzie (2009) show that the failure to control for stratification variables results in overly conservative standard errors. We lose 5 observations when we include these controls due to missing data for indicators for current use of FP and desire for another child at baseline.

[31]We lose 4 observations when we include these controls due to missing data for the work variable at baseline.

[32]As previously mentioned, we were able to interview 625 non-attritor women at endline. Our ToT sample has 615 women, however, because the voucher could not be delivered to 10 treatment women. The ITT effects of our interventions on all outcomes are similar and are available upon request.

of peers, access to the same set of clinics, or the similar timing of endline data collection. As we have 28 villages in our sample, we also verify that our main estimates are robust to wild-clustered bootstrapped errors, which account for the small number of clusters. Lastly, we check that our main findings are robust to multiple hypotheses testing correction. We present these robustness checks in Section 5.

Spillovers to the control group. If women in the treatment groups sought the company of or visited the ADC with women in the control group, our estimates of treatment effects would be biased downwards. This concern is especially relevant if BAF women offered a voucher to women in the control group. However, this is unlikely to be a significant concern because, at endline, only 4 women in the control group reported having received a voucher for FP services at the ADC. This is likely due to the fact that we selected only one woman per household for our experiment and our sample women had relatively few connections with women outside their households at baseline.

5   Results

We begin by examining treatment effects on clinic visits for FP services. We evaluate whether treated women invited others to accompany them to our partner clinic and subsequently visited the clinic with them, or whether they visited the ADC alone. We also distinguish between the types of peers who were approached by the woman, e.g., mothers-in-law and husbands versus others. We then analyze if voucher receipt translated into an increase in modern contraceptive use. Next, we assess the impact of voucher receipt–especially the BAF voucher–on the size of a woman's social network, FP-related communication with her peers, and her fear of stigma related to FP use. Finally, we rule out any potential backlash effects on treated women from their family members and examine the role of financial constraints in driving the effectiveness of vouchers.

5.1   Clinic Visits for FP Services

Women in our sample are heavily dependent on the company of their husbands and mothers-in-law for visits to health facilities, especially for FP services. At baseline, only 6 percent of women who had ever visited an FP clinic had done so alone. Moreover, 79 percent of women who had visited an FP clinic reported being accompanied by their husbands (35 percent) or mothers-in-law (44 percent). Given that a primary objective of our study is to test if the interventions decreased women's dependence of their husbands and mothers-in-law to access FP, we are interested in exploring whether the vouchers enabled a woman to visit the ADC alone or with individuals other than her husband and mother-in-law during the intervention period. However, before examining the impacts on visits, we first evaluate the effects of voucher receipt on (i) whether a woman **asked** someone to accompany her to the ADC during the intervention period (extensive margin), (ii) the number of individuals whom she asked to

accompany her (intensive margin), and (iii) the type(s) of individuals that she asked.[33]

Our interest in examining "asking" or "inviting" individuals other than the husband and the mother-in-law to clinic visits (which is distinct from "visiting with" them) stems from the fact that husbands and mothers-in-law exercise significant control over women's social interactions in our sample (Anukriti et al., 2020). According to the 2015-16 DHS, 31 percent of women in rural Uttar Pradesh are not permitted by their husbands to meet female friends, and 27 percent of wives report that their husbands insist on always knowing their whereabouts (GoI, 2017).[34] In such a context, seeking company from individuals other than husbands and mothers-in-law may, in itself, be an expression of women's agency and empowerment, irrespective of whether this intention translates into downstream outcomes (e.g., clinic visits and health care utilization). Moreover, as previously mentioned, many young married women in our sample prefer to visit a clinic with someone.

A. Seeking company to visit the ADC. Column 1 of Table 2 shows that women in both treatment groups were significantly more likely than the control group to seek the company of another person to visit the ADC during the intervention period.[35] Moreover, women in the BAF group were significantly more likely to invite others relative to women in the Own voucher group; the impact of receiving a BAF voucher on seeking company (36 percentage points (p.p.)) is almost double that of receiving an Own voucher (17 p.p.).[36] We find similar effects on the intensive margin (Panel A of Table A.6)—both vouchers increased the number of individuals that a woman asked to accompany her to the ADC; and the impact of the BAF voucher was significantly larger than that of the Own voucher. This pattern of results also indicates that the treatment women understood the difference between the two types of vouchers.

Table 2 further shows that the vouchers, especially the BAF voucher, altered the type of companions sought by treatment women relative to the control group.[37] Unsurprisingly,

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[33]We note that a woman was given the opportunity to ask or invite multiple individuals to accompany her on any given visit. Moreover, she was given the opportunity to ask different individuals to accompany her on different visits.

[34]The corresponding figures at the national level are 19 to 20 percent.

[35]Ideally, we would compare treatment and control groups in terms of the likelihood that a woman sought company to visit *any* clinic. Unfortunately, we do not have data on whether a woman invited others to accompany her to visit clinics other than the ADC during the intervention period. Therefore, it is possible that the outcome means for control women in Table 2 are low not because they sought company to visit clinics at a lower rate than treatment women in general, but rather because control women might have sought company to visit *non-ADC* clinics, given that they had no incentive to visit the ADC. Nevertheless, this issue is not pertinent for the comparison that we are most interested in, i.e., between Own and BAF voucher groups, because both groups had a similar incentive to visit the ADC. Moreover, this issue does not arise for our analysis of visits given that we collected data on visits to both the ADC and other clinics for FP services.

[36]Panel A of Table A.5 shows that these estimates are robust to the inclusion or exclusion of various control variables.

[37]These outcomes are not conditional on asking someone for company. For example, the indicator for whether a woman asked her sister-in-law for company is zero both when she asked someone else as well as when she did not ask anyone.

for some treatment women, voucher receipt translated into invitations to their husbands and mothers-in-law for visits to the ADC (Column 2); however, these effects are relatively smaller than the increase in the likelihood that women, especially BAF women, sought the company of individuals other than their husbands and mothers-in-law (Column 3). The effects on seeking the company of individuals other than husbands or mothers-in-law were 29 p.p. for the BAF group and 10 p.p. for the Own voucher group, relative to the control group. In contrast, the impacts on asking husbands and mothers-in-law were much smaller (3 p.p. for the BAF voucher and 4 p.p. for the Own voucher). Moreover, the BAF voucher was significantly more effective (by 19 p.p.) than the Own voucher in enabling women to invite individuals other than their husbands and mothers-in-law; whereas, both vouchers had a statistically similar effect on asking husbands or mothers-in-law.

Most notably, treated women were more likely to seek the company of their sisters-in-law and non-relatives (female friends or neighbors); and these effects are significantly larger for BAF women relative to Own voucher women. In Column 4 of Table 2, the BAF voucher increased a woman's likelihood of asking her sister-in-law by 19 p.p., while the effect for women who received an Own voucher was significantly smaller (5 p.p.). Similarly, the effect of receiving a BAF voucher on a woman's probability of asking non-relatives (in Column 5) was more than three times that of receiving an Own voucher. The larger effects for sisters-in-law than for non-relatives are consistent with our study context, where women are less likely to be sanctioned by their husbands and mothers-in-law for interacting with female relatives than with female friends. Given that our sample women have few pre-existing connections outside the home, it might also be easier for women to reach out to their sisters-in-law than to form new connections with non-relatives.

B. Clinic visits. Column 1 of Table 3 shows that both vouchers significantly increased the likelihood of treated women visiting the ADC for FP services during the intervention period relative to control women. Women who received the Own voucher were 21 p.p. more likely to have visited the ADC than control women. The impact on women who received the BAF voucher was also significant and 19 p.p. higher relative to the control group, but not statistically different from the effect of the Own voucher.[38]

Next, we examine the effect of both interventions on a woman's likelihood of visiting *any* clinic (the ADC or non-ADC) for FP services during the intervention period. This analysis allows us to measure the extent to which the effects on visiting the ADC are driven by (i) existing FP users substituting away from other clinics to the ADC (to take advantage of the voucher and benefit from the availability of higher quality FP services) and (ii) our interventions attracting new FP users. Column 2 of Table 3 shows that there was a sizable

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[38]Appendix Table A.7 shows that these results are robust to the inclusion or exclusion of various control variables.

and significant increase in the likelihood of visiting any FP clinic among Own voucher (18 p.p.) and BAF voucher (13 p.p.) groups, relative to the control group (19 percent).[39] The effect of the BAF voucher is statistically similar to that of the Own voucher. These results imply that our intervention effects are not exclusively driven by substitution between ADC and non-ADC users, but also by the engagement of new visitors to FP clinics.

Consistent with FP vouchers being more relevant for women who have a higher demand for FP, in Column 1 of Table A.9, we find that the effects on clinic visits are driven by women who did not want another child at baseline. Moreover, the effects are larger for women who had at least one son at baseline (Column 2 of Table A.9), in line with the prevalence of son preference and son-biased stopping rules in our setting (Anukriti et al., 2021; Bhalotra and Van Soest, 2008; Clark, 2000; Jensen, 2012; Rosenblum, 2013). Column 3 of Table A.9 shows that even women who had never visited an FP clinic at baseline experienced a significant increase in the likelihood of visiting a clinic for FP due to the vouchers, indicating that our interventions were effective for new users.

In Columns 3-5 of Table 3, we test if the voucher-induced visits to the ADC were more likely to have taken place without women's husbands or their mothers-in-law, i.e., either alone or with individuals different from husbands and mothers-in-law.[40] Unsurprisingly, some of the treatment women who experienced a positive impact on clinic visits visited the ADC with their usual companions, i.e., their husbands and mothers-in-law (Column 4). Nonetheless, relative to the control group, treatment women were also significantly more likely to visit the ADC alone. It is worth noting that, at baseline, only 6 percent of women who had previously visited an FP clinic had visited the clinic alone. In comparison, the Own voucher and the BAF voucher increased the likelihood of visiting the ADC alone during the 10-month intervention period by 3.6 p.p. and 5.2 p.p. respectively, relative to the control mean of 1 percent. These results suggest that voucher receipt empowered a small but significant fraction of our sample women to "bypass" the social norm of visiting an FP clinic with somebody else. Moreover, in Column 5 of Table 3, we observe a significant (7 to 8 p.p.) increase in visits to the ADC with individuals besides women's husbands and mothers-in-law for both treatment groups.

C. Heterogeneity by mother-in-law opposition to FP use. Although there are no significant differences, on average, between the treatment effects of the BAF and the Own voucher on visiting the ADC or any clinic for FP services in Table 3, the BAF voucher was more effective than the Own voucher for women who, at baseline, were more likely to face intrahousehold constraints to FP access, as captured by their mother-in-law's opposition to FP at baseline. We focus on the mother-in-law because, in our context, a woman's mother-in-law exerts a stronger influence over her FP decision-making and fertility outcomes than

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[39]Similarly, on the intensive margin (Table A.8), both vouchers significantly increased the number of visits to the ADC and to any clinic for FP services during the intervention period.

[40]Note that the outcomes in Columns 3-5 of Table 3 are not conditional on visiting the ADC.

even her husband and other family members (Anukriti et al., 2022, 2020). Compared to their husbands, women have greater discordance in fertility and son preference with respect to their mothers-in-law.[41] This misalignment in fertility preferences, in turn, contributes to mothers-in-law expressing stronger disapproval of FP than women's husbands.

In Table 4, we estimate a "fully interacted model" for each of our outcomes of interest by interacting mother-in-law opposition to FP at baseline with each of the covariates that are included in our main specification while also controlling for the main effect of mother-in-law opposition to FP. The BAF voucher was significantly more effective than the Own voucher for women who faced greater opposition from their mothers-in-law at baseline in increasing: a) their ability to seek company from and visit the ADC with individuals other than their husbands and mothers-in-law (Columns 3 and 6); b) the likelihood of visiting the ADC (Column 4); and c) their overall likelihood of visiting any FP clinic (Column 7).[42] The p-value for the test evaluating the difference between the effects of BAF and Own vouchers by mother-in-law opposition (i.e., *Own × MIL opposed = BAF × MIL opposed*) is 0.019 for the likelihood of a woman visiting the ADC (Column 4), is 0.080 for her overall likelihood of visiting a clinic for FP (Column 8), and is 0.014 for the likelihood of her visiting the ADC with someone other than her husband or mother-in-law (Column 6) during the intervention period. In fact, for women facing opposition to FP use from their mothers-in-law, the Own voucher was statistically ineffective—both in terms of seeking company and visiting the ADC—in lowering a woman's reliance on her husband and mother-in-law, as is reflected in the p-values for *Own + Own × MIL opposed = 0* in Columns 3 and 6.

Our estimates suggest that for women who perceived their mothers-in-law to be opposed to FP at baseline, the BAF voucher increased the likelihood of visiting the ADC by 31 p.p.— a significantly larger effect than that of the Own voucher (10 p.p.).[43] On the contrary, both vouchers had a statistically similar and significantly positive effect on clinic visits to the ADC for women who did not perceive opposition from their mothers-in-law. We observe a similar pattern for visits to any clinic for FP services (Column 7).

These findings are consistent with BAF women seeking companions who may be more likely to support them in their own health care-seeking, such as sisters-in-law or female non-relatives, than their mothers-in-law.[44] If sisters-in-law and female friends are less likely to negatively influence women's decision-making over FP use, these findings imply that BAF

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[41]In our sample, 82 percent (67 percent) of mothers-in-law wanted their daughters-in-law to have more sons (children) than what their daughters-in-law wanted.

[42]Table A.10 presents this analysis for the impacts on inviting sisters-in-law or non-relatives to the ADC.

[43]In fact, the p-value for *Own + Own x MIL opposed = 0* in Column 4 equals 0.220, implying that the Own Voucher had an insignificant effect on visits to the ADC for women who perceived their mothers-in-law to be opposed to FP at baseline.

[44]Note that husbands were not eligible to receive an additional "peer" voucher; and it is unlikely that mothers-in-law would have been interested in using FP given that, on average, they were 50 years old at baseline and, hence, less likely to want or need FP services.

vouchers increased women's reproductive autonomy.[45]

This heterogeneity analysis also enables us to rule out other mechanisms underlying our results. For instance, it is possible that BAF women may have felt a greater sense of altruism towards other women who could benefit from an FP voucher or may have been reciprocating or exchanging favors with other women whom they invited and visited the ADC with. However, altruism or reciprocity are unlikely to be negatively correlated with mother-in-law opposition to FP, allowing us to interpret the heterogeneous effects in Table 4 as an enabling effect of the BAF voucher, over and above the effect of the Own voucher, that relaxes some of the intrahousehold constraints to FP access that women face in our setting.

5.2 Modern Contraceptive Use

To measure if a woman's visits to the ADC due to our interventions changed her FP use, we estimate the reduced form effect of receiving the vouchers on a woman's modern contraceptive use at endline.[46] Column 1 of Table 5 shows that modern contraceptive use increased for women in both treatment groups by 6 p.p., which translates into a 56 percent increase with respect to the control group mean at endline (12 percent).[47] These effects are sizable and are almost significant at conventional levels of significance (the p-values for the coefficients of Own and BAF vouchers are 0.116 and 0.106, respectively).[48] However, we observe no effects on the likelihood of a woman using *any* contraceptive method, which implies that the voucher effects are driven by a switch from traditional methods to modern methods of contraception (Table A.11). We also observe a decline in the likelihood of becoming pregnant and of giving birth during the intervention period; however, these effects are insignificant because we lack statistical power to detect any changes in fertility that occurred within the relatively short 10-month intervention and follow-up period.

Column 2 of Table 5 shows that the BAF voucher had a larger effect than the Own voucher on modern method use for women who, at baseline, faced greater opposition to FP use from their mother-in-law. Although the p-value for the *Own × MIL opposed = BAF × MIL opposed* test is above the conventional levels, likely due to limited power, the coefficient of *BAF voucher × MIL opposed* (0.153) is clearly larger than that of *Own voucher × MIL opposed* (-0.003). Consistent with this pattern, Columns 3 and 4 show that the BAF voucher

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[45]One may be concerned that BAF women are over-reporting that they invited others to visit the ADC with them relative to the Own voucher group due to social desirability bias. However, the results in Table 4 are inconsistent with social desirability bias driving the differential effects between Own and BAF voucher groups, unless this bias is negatively correlated with mother-in-law opposition to FP use.

[46]Modern methods include female sterilization, male sterilization, IUDs, injectables, implants, pills, condoms, female condoms, emergency contraception, diaphragm, foam or jelly, or any other modern method.

[47]On average, treated women utilized a third of the voucher amount by spending INR 309 (USD 4.11) across a total of 94 visits to the clinic. Over the 10-month intervention period, women across both the BAF and the Own voucher groups spent a total of INR 28,824 (USD 318.86) on reimbursable FP services.

[48]The treatment impacts are entirely driven by short-acting modern methods for which our vouchers translated into a 100 percent subsidy over the intervention period. Short-acting methods include pills, condoms, female condoms, emergency contraception, diaphragm, and foam or jelly.

was more effective than the Own voucher in also helping women overcome other social constraints associated with their FP use. The BAF voucher increased modern method use by a statistically significant 11 p.p. with respect to the control mean of 12 percent for women who considered concealability to be an important feature when selecting an FP method at baseline. Similarly, BAF vouchers more than doubled modern method use for women who found FP use embarrassing at baseline.[49] In contrast, the Own vouchers had a smaller and statistically insignificant effect on modern method use for these groups of women (see p-values for *Own + Own × Covariate = 0* in Columns 3 and 4). Taken together, we find that enabling a woman to visit FP clinics with other women through a BAF voucher overcame opposition from influential family members as well as her own embarrassment and fear of potential stigma related to FP use.

These results contribute to the evidence base on the impact of vouchers on FP use (Bellows et al., 2015). While a number of previous studies have been unable to identify causal impacts, our findings are in line with some recent studies that rigorously estimate treatment effects using randomized experiments (e.g., Athey et al. (2021); Karra and Zhang (2021); Tran et al. (2020)). In particular, Athey et al. (2021) find that offering long-acting reversible contraceptive methods for free or at a very small price in Cameroon increased adoption by 50 percent, which is similar to the 56 percent increase in method use that we observe in Column 1 of Table 5. However, a crucial way in which our study differs from these papers is in explicitly recognizing that financial barriers are only one of the many constraints to FP use that women in our context face to accessing services; in this manner, our paper is similar to Ashraf et al. (2014). For women who experience social and intrahousehold barriers to FP use, such as those that are examined in Table 5, combining a voucher for a woman's own use with a similar voucher for her peers is much more effective in increasing their uptake of modern contraception as compared to just receiving a voucher for her use alone.

5.3 Women's Social Interactions

The results thus far have shown that the BAF voucher, more so than the Own voucher, enabled women to seek the company of and to visit the ADC with individuals other than their husbands and mothers-in-law. These social interactions, prompted by the BAF voucher, could potentially have (a) expanded women's social networks, particularly if a woman's baseline peers were unwilling or unable to accompany her to the ADC or if she believed that her baseline peers did not approve of or need FP, and (b) strengthened women's FP-related engagement with their baseline peers as well as with any new connections that were formed as a result of the intervention. In this section, we provide evidence to support both of these possibilities. Moreover, we show that these changes in social interactions led to additional benefits for women, including a reduction in their fear of stigma related to FP use.

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[49]The p-values for *BAF + BAF × Covariate = 0* are 0.042 and 0.011 in Columns 3 and 4, respectively.

Columns 1 and 2 of Table 6 show that, at endline, BAF women reported having higher numbers of close peers in their village, and also outside their household, relative to control women and relative to women who received an Own voucher.[50] Relative to control women, who had an average of 0.64 close peers in their village at endline, women who received a BAF voucher increased their number of close peers in the village by 0.13, or by 21 percent with respect to the control mean.[51] The BAF effect on a woman's number of close peers in her village is also significantly larger (by 18 p.p.) than the null impact of the Own voucher, suggesting that the BAF voucher was more effective in expanding the size of women's FP-related social networks by connecting them with other women in their villages. Our previous results on seeking companionship to visit the ADC and visiting the ADC suggest that these new peers are likely to be women's sisters-in-law and female non-relatives.

In Columns 3 and 4 of Table 6, we examine the effects of the vouchers on peer engagement and communication. Specifically, we assess the impact of our vouchers on a woman's likelihood of having at least one close peer in her village who: 1) has accompanied her to a health facility and 2) has ever advised her to use an FP method. Across both measures, BAF women were significantly more likely to have engaged with their close peers relative to control and Own voucher women. Moreover, the impact of the Own voucher on these measures of peer engagement was small and insignificant, highlighting that the process of inviting and offering a voucher to other women to visit the ADC with them and subsequently visiting the ADC together fostered FP-related discussions with peers for BAF women. We note that these results on peer engagement may be driven both by greater engagement with pre-existing peers from baseline and with new peer connections that were formed as a result of the BAF voucher; however, our data does not allow us to disentangle these two channels.

The increased FP-related peer engagement that resulted from our BAF intervention may have generated additional benefits for treated women. One such potential benefit is a reduction in women's fear of stigma related to their FP use. Prior research suggests that a fear of stigma is an important barrier to women's modern contraceptive use (Ayehu et al., 2016; Bender and Fulbright, 2013; Jain et al., 2018; Nyblade et al., 2017; Sulemana et al., 2015) and peer support can play a key role in decreasing fear of stigma around health issues, such as mental health (Burke et al., 2019) and take-up of health technologies (e.g., menstrual products) (Castro and Mang, 2022). In Column 5 of Table 6, we present treatment effects on women's fear of stigma, measured by asking a woman if she would be afraid of being seen by someone she knew at an FP clinic. This variable captures a respondent's "anticipated stigma" or the belief that others will discriminate against oneself (Quinn and Chaudoir, 2009; Weiss, 2008). Indeed, anticipated

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[50]The number of observations in this table is lower than in previous tables because questions related to the outcome variables were not asked from women who were surveyed by phone at endline.

[51]The BAF voucher also increased the number of close <u>outside</u> peers in the village by 10 p.p. or by 27 percent with respect to the control mean. Although this effect is significantly larger than the Own voucher effect, it is not statistically significant at conventional levels (p-value=0.110).

stigma is significantly associated with unmet need for FP-RH services in the literature (Jain et al., 2018); in our sample as well there is a negative correlation between fear of stigma and FP use for control women. We find that women who received a BAF voucher are 9 p.p. less likely to fear stigma at endline than control women, 24 percent of whom fear such stigma at endline. This effect is statistically significant and sizable, representing a 38 percent reduction with respect to the control mean. In contrast, we find no impact of the Own voucher on this outcome.

Next, in Table 7 we analyze heterogeneity in treatment impacts on a woman's number of peers and peer engagement. As before, we explore differential treatment effects by mother-in-law opposition to FP use at baseline. In addition, we examine if the effects differed by the availability of peers who could support a woman's access to FP services at baseline, as women who lacked suitable peers at baseline had a stronger incentive to form new connections during the intervention period. We focus on the number of close peers in village as a measure of network size and an indicator for a woman having at least one close peer in her village who has accompanied her to a health facility as a measure of peer engagement.[52]

Columns 1-2 of Panel A in Table 7 show that the larger network expansion effect of the BAF voucher, relative to the effect of the Own voucher, is driven by women who, conditional on having peers at baseline, believed that none of their close village peers were currently using FP, and hence may not have had a demand for these services. While the coefficient of *BAF + BAF × Covariate* is significantly different from zero in Column 1, the coefficient of *Own + Own × Covariate* is not. Indeed, BAF women in this sub-group substantially increased their number of close peers in the village by 0.38 peers (*BAF + BAF × Covariate*) relative to the control mean (0.635), a 60 percent increase in the number of peers with respect to the control group. We do not observe any network expansion due to either voucher, nor do we observe a difference in the effects of the two vouchers, for women who had at least one close peer in their village who used FP at baseline. These patterns are consistent with a) the hypothesis that the expansion of women's networks is being driven by a greater "need" to form new social connections among women who believed that none of their baseline close village peers were FP-users and b) the stronger ability of BAF women to form new connections than Own voucher women. We observe a similar pattern for peer engagement in Column 1 in Panel B of Table 7 indicating that BAF women who lacked suitable peers at baseline, i.e., peers with a perceived demand for FP, acquired more supportive peers at endline.

Column 2 in Panel B of Table 7 shows that the relative impact of the BAF voucher (versus the Own voucher) on peer engagement was also stronger (though not statistically) for women whose mothers-in-law were opposed to FP at baseline than those whose mothers-in-law were not opposed. Although we are power-constrained, this pattern is consistent with our previous

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[52]Heterogeneity analyses for the other two outcomes examined in Table 6 are similar and are available upon request.

heterogeneity results showing that the BAF voucher enabled women to seek peer support as a means to counter opposition from household members, particularly their mothers-in-law. However, we do not observe a similarly clear pattern in terms of network size in Column 2 of Panel A. These results suggest that in a socially conservative setting such as ours, it may be harder for women to overcome constraints imposed by mothers-in-law and form new connections (expand their networks) than strengthen their interactions with existing peers through the BAF voucher intervention.

Taken together, our results suggest that the BAF voucher, more than the Own voucher, enabled women to seek out peer support, both by directly expanding women's FP peer networks as well as by increasing their engagement with their old and new peers. These results are important in their own right, given the high level of social isolation experienced by women not only in our baseline sample, but also in other parts of rural India (Andrew et al., 2020; Kandpal and Baylis, 2019; Prillaman, 2021), which prevents them from directly and independently taking advantage of the numerous benefits provided by social networks to their members. Evidence from Anukriti et al. (2020) shows that the benefits of having even a few close peers outside the household are substantial in terms of shaping women's health-seeking behavior. The magnitude of our treatment effect on a woman's number of close peers in her village is comparable to that in Prillaman (2021), who finds that access to a self-help group in Madhya Pradesh (India) increased a woman's total number of friends in her village by 23 percent.

5.4 Additional Results

A. Backlash Effects. One may be concerned that the increase in women's visits to an FP clinic and her use of modern contraception might have led to unintended "backlash" effects from husbands or mothers-in-law, especially in households with greater discordance in fertility preferences. In the context of Zambia, Ashraf et al. (2014) find that women given access to concealable methods of contraception had lower subjective well-being, reflecting greater marital tensions. Although we lack data on domestic violence and mental health, we have the following evidence to indicate that the vouchers did not negatively affect women's well-being.

First, treatment women did not conceal their receipt of the voucher or visits to the ADC from their husbands and mothers-in-law. Almost all treated women who visited the ADC during the intervention period reported that they had informed their husbands and mothers-in-law about receiving the voucher and visiting the ADC.[53] Second, in Anukriti et al. (2022), we show that vouchers increased mother-in-law approval of FP, and one potential mechanism for this effect is that treated women were more likely than control women to have initiated

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[53]Overall, 94 (92) percent of treated women informed their husbands (mothers-in-law) about receiving the voucher and visiting the ADC.

discussions about FP with their mothers-in-law. This evidence suggests that women did not try to "hide" their intentions to visit the ADC for FP from their mothers-in-law. Third, there was no significant endline difference between treatment and control women in the likelihood of ever facing any problems or negative experiences from discussing or accessing or using a method of FP.[54] Fourth, we do not find any significant effect of the vouchers on women's or their husbands' (as reported by the sample women) satisfaction with their sex life or overall satisfaction with their marriage. These results are available in Table A.12.

B. The Role of Financial Constraints. Our interventions are also able to relax women's financial constraints to access and use of FP by providing vouchers that lower the monetary costs of visiting FP clinics and adopting contraception. Key monetary costs that are alleviated by our intervention include fees for FP services and methods, transportation costs, and opportunity costs of visiting any FP clinic. Therefore, we expect that the observed positive treatment effects on clinic visits and contraceptive use will be more pronounced for women who belonged to poorer households at baseline. In Table A.13, we examine the heterogeneity in treatment effects by women's household poverty status at baseline using a fully interacted model. Ideally, we would like to use a woman's household income at baseline to capture her financial constraints; however, it is difficult to measure income in rural households like those in our sample (Meyer and Sullivan, 2003). Instead, we define a woman to be poor at baseline if her household is below the poverty line and is in the bottom two terciles of the asset index distribution in our sample. For this analysis, we pool the two treatment groups (BAF and Own vouchers) because (a) women in both groups received exactly the same voucher, and therefore the same monetary incentives, for their own use and (b) we do not expect that a woman's financial constraints are affected by her peers' access to vouchers for themselves since the vouchers are not transferable.[55]

Table A.13 shows that the positive effects of voucher receipt on a woman's likelihood of visiting the ADC or any clinic for FP services and on her modern contraceptive use were larger for women who were poorer at baseline. For instance, poorer women experienced a 13 p.p. larger increase in the likelihood of visiting the ADC and a 19 p.p. larger increase in modern method use relative to less poor women. These effects are substantial especially given that the poorer control women had almost never visited the ADC at baseline, suggesting that the ADC, which is a private clinic, might have been out of reach for financially constrained women. Overall, these results are consistent with prior literature in showing that vouchers can overcome financial constraints to women's FP use.

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[54]About 8 percent of our sample women at endline reported ever experiencing problems or negative experiences from discussing or accessing or using a method of FP and only 1 percent of the sample reported having a negative experience with their husbands or parents-in-law.

[55]This would not be the case if BAF women, for instance, were able to extract transfers from their peers in exchange for inviting them to visit the ADC with them. However, treated women did not report doing so in our endline survey.

C. Robustness Checks. In Table A.14, we test the robustness of our findings to alternate modes of inference for four of our main outcomes. Our results are robust to a) clustering the standard errors by village, b) to wild-clustered bootstrapped errors at the village level, and c) to multiple hypotheses testing correction.

6   Conclusions

Restrictive norms, resource constraints, and social isolation can limit women's access to and utilization of various public services and programs, especially in developing countries. These constraints are more pronounced in contexts like rural India, where women lack freedom of movement and are socioeconomically dependent on family members, and in domains such as fertility and FP. In this study, we evaluate an innovative approach to improve married women's access to FP that not only overcomes financial barriers but also social barriers to FP use, such as opposition from mothers-in-law and lack of peer support.

Although our study is based in one Indian district, its findings are relevant not only to other parts of India and South Asia, but also to a number of settings where women face significant socioeconomic and mobility barriers and where extended households are prevalent. Moreover, the relevance of our findings and interventions extends to areas beyond FP-RH (e.g., female education and labor force participation) where women's inability to access public spaces and restrictions imposed by family members are key barriers to their access (Bernhardt et al., 2018; Bursztyn and Jensen, 2017) and where peer support can make a substantive difference (Field et al., 2016; Kandpal and Baylis, 2019).

We draw a number of lessons from this study that are relevant for policy making and future research. First, our results highlight a need to move beyond dyadic models of household bargaining and decision-making that are based on nuclear family structures. In most household surveys and collective models of the household, a woman's decision-making ability within the household is bench-marked against that of her husband. As a result, programs and policies that are informed by these data and studies rely on strategies that seek to exclusively engage husbands as a means to improve women's bargaining power and outcomes.[56] In many low- and middle-income settings, however, extended families are common and comprise a broader range of kinship structures, such as joint, multi-generational, and polygamous relationships within the household (Kramer, 2020). Variations in kinship strength and relative bargaining power across extended household members make it necessary to understand the influence of, and potentially even target, household members other than the woman's husband on her well-being. More broadly, policy impacts on women's well-being can vary by household structure in particular when extended families are prevalent (Heath et al., 2020).

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[56]Examples of such strategies include couples' counseling, "husbands' clubs" or the creation of partner-friendly spaces within the health sector (father-friendly clinics, couples-oriented child visits), among others (Bank, 2019; Davis et al., 2016; Hawkins et al., 2008; Sicouri et al., 2018; Tiedje and Darling-Fisher, 2003).

Second, our findings underscore that the mother-in-law is a key "influencer" in patrilocal South Asian households. Well-intended interventions that exclusively target women or married couples may be ineffective if they naïvely fail to account for the role of mothers-in-law, especially if preferences and incentives between women and their mothers-in-law are misaligned. In contrast, mothers-in-law who have an incentive to support their daughters-in-law can also exert a positive impact on outcomes related to childcare, employment, and health during pregnancy (Khanna and Pandey, 2020; Varghese and Roy, 2019). Future research can inform policy makers about how to effectively engage mothers-in-law to improve women's outcomes.

Third, our findings motivate us to reflect on approaches that can expand women's social networks and thereby improve women's welfare. Forming women's collectives (e.g., microfinance and self-help groups) is a commonly used policy instrument that has been effective in strengthening women's social connections (e.g., Kumar et al. (2019)); however, women's participation in such groups is low (Diaz-Martin et al., 2021). Moreover, the potential role of women in impacting other women's lives extends well beyond such groups. In contexts such as ours, women often turn to other female family members, such as sisters-in-law, for support since familial interactions are less likely to be socially sanctioned. Our study suggests that enabling women to leverage support from their sisters-in-law or female friends may, therefore, be an effective way to lower women's reliance on more constraining members of their household.[57]

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[57]Although sisters-in-law could serve as potential "allies" to counterbalance the influence of the mother-in-law, strategic interactions between sisters-in-law, including potential competition for resources within the household, also need to be considered, in a manner similar to polygamous households, e.g., Rossi (2019).

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Figures and Tables

Figure 1: Experimental Design

BASELINE SAMPLE: 671 eligible women from 28 villages in Jaunpur

RANDOMIZATION

T0 (Control): 350 eligible women   **T1 (Own): 156 eligible women**   **T2 (BAF): 165 eligible women**

671 women approached for follow-up

6 — *Could not be approached (no working GPS coordinates, directions, address)*

665 women attempted in person or by phone

32 — *Could not participate at all (phone number not working, 3 attempts to contact in person)*

633 women contacted for follow-up

8 — *Only partially completed follow-up survey – no outcome data*

FOLLOW-UP SAMPLE: 625 eligible women

10 — *Vouchers could not be delivered: 6 Own vouchers + 4 BAF vouchers*

TREATMENT-ON-TREATED SAMPLE: 615 eligible women

Notes: BAF denotes the Bring-a-friend voucher group.

Table 1: Balance at baseline: Individual characteristics

| | Control (C) | | Own | | BAF | | C - Own | C - BAF | Own - BAF |
	N	Mean/SD	N	Mean/SD	N	Mean/SD	Diff.	Diff.	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age	350	25.617	156	25.590	165	25.867	0.027	-0.250	-0.277
		(2.653)		(2.745)		(2.560)			
Years of schooling	350	9.420	156	9.737	165	9.564	-0.317	-0.144	0.174
		(4.536)		(4.090)		(4.675)			
Hindu	350	0.949	156	0.910	165	0.927	0.038	0.021	-0.017
		(0.221)		(0.287)		(0.260)			
Scheduled Caste or Tribe	350	0.437	156	0.449	165	0.448	-0.012	-0.011	0.000
		(0.497)		(0.499)		(0.499)			
Other Backward Class	350	0.460	156	0.449	165	0.382	0.011	0.078*	0.067
		(0.499)		(0.499)		(0.487)			
Wears ghunghat	350	0.871	156	0.891	165	0.903	-0.020	-0.032	-0.012
		(0.335)		(0.313)		(0.297)			
Worked last year	346	0.173	155	0.097	165	0.115	0.077**	0.058*	-0.018
		(0.379)		(0.297)		(0.320)			
Co-residence with MIL	350	0.683	156	0.699	165	0.648	-0.016	0.034	0.050
		(0.466)		(0.460)		(0.479)			
Mobility score	350	1.003	156	0.737	165	0.824	0.266*	0.179	-0.087
		(1.729)		(1.507)		(1.577)			
Asset score	350	-0.098	156	0.046	165	0.164	-0.144	-0.262	-0.118
		(1.588)		(1.534)		(1.797)			
Number of general peers	350	1.643	156	1.654	165	1.655	-0.011	-0.012	-0.001
		(1.033)		(1.039)		(1.004)			
Number of close peers inside village	350	0.549	156	0.500	165	0.612	0.049	-0.064	-0.112
		(0.607)		(0.585)		(0.686)			
Number of children	350	1.943	156	1.987	165	1.945	-0.044	-0.003	0.042
		(0.910)		(0.930)		(0.945)			
Wants another child	346	0.500	156	0.494	165	0.497	0.006	0.003	-0.003
		(0.501)		(0.502)		(0.502)			
Using any FP method	349	0.481	156	0.468	165	0.473	0.013	0.009	-0.005
		(0.500)		(0.501)		(0.501)			
Using modern FP method	349	0.175	156	0.205	165	0.164	-0.030	0.011	0.041
		(0.380)		(0.405)		(0.371)			
Ever visited a clinic for FP	350	0.360	156	0.333	165	0.352	0.027	0.008	-0.018
		(0.481)		(0.473)		(0.479)			
MIL opposed to FP	349	0.172	154	0.130	164	0.140	0.042	0.032	-0.010
		(0.378)		(0.337)		(0.348)			
F-test of joint significance: p-value							0.383	0.324	0.895
F-test: Observations							493	504	317

Notes: Standard deviations (SD) are in parentheses. BAF denotes Bring-a-Friend, FP denotes family planning, and MIL denotes mother-in-law. Variable definitions are in Online Appendix. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

Table 2: Seeking company for clinic visits during the intervention period

| | Sought company to visit the ADC from: | | | | |
| | Someone | Husband/ MIL | Non-husband/ MIL | Sister-in-law | Non-relative |
	(1)	(2)	(3)	(4)	(5)
Own Voucher	0.173***	0.040*	0.099***	0.053***	0.031*
	[0.035]	[0.022]	[0.028]	[0.020]	[0.017]
BAF Voucher	0.356***	0.032*	0.291***	0.186***	0.103***
	[0.039]	[0.019]	[0.038]	[0.032]	[0.028]
Observations	603	586	586	586	586
Endline control mean	0.034	0.016	0.022	0.003	0.009
p-value: Own = BAF	0.000	0.783	0.000	0.000	0.011

Notes: All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table 3: Clinic visits for family planning services during the intervention period

| | | | Visited the ADC with: | | |
| | Visited the ADC | Visited any clinic | Alone | Husband/ MIL | Non-husband/ MIL |
	(1)	(2)	(3)	(4)	(5)
Own Voucher	0.208***	0.179***	0.036*	0.046*	0.065**
	[0.035]	[0.047]	[0.018]	[0.026]	[0.027]
BAF Voucher	0.190***	0.125***	0.052**	0.034	0.079***
	[0.033]	[0.045]	[0.021]	[0.024]	[0.028]
Observations	606	604	606	516	516
Endline control mean	0.015	0.193	0.009	0.018	0.022
p-value: Own = BAF	0.702	0.336	0.510	0.712	0.692

Notes: All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $*p < 0.1, **p < 0.05, ***p < 0.01$.

Table 4: Heterogeneous treatment effects by mother-in-law opposition to family planning at baseline

	Sought company to visit the ADC from:			Visited the ADC	Visited the ADC with:		Visited any clinic
	Someone	Husband/ MIL	Non-husband/ MIL	the ADC	Husband/ MIL	Non-husband/ MIL	any clinic
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Own Voucher	0.185***	0.051*	0.092***	0.220***	0.030	0.064**	0.180***
	[0.040]	[0.027]	[0.031]	[0.038]	[0.026]	[0.032]	[0.052]
BAF Voucher	0.342***	0.037*	0.263***	0.151***	0.016	0.050*	0.083
	[0.043]	[0.022]	[0.042]	[0.034]	[0.025]	[0.029]	[0.051]
Own Voucher × MIL opposed to FP	-0.163**	-0.062*	-0.058	-0.123	0.093	-0.041	-0.061
	[0.071]	[0.035]	[0.063]	[0.088]	[0.071]	[0.041]	[0.133]
BAF Voucher × MIL opposed to FP	0.105	0.013	0.134	0.163	0.138	0.161**	0.229*
	[0.119]	[0.045]	[0.108]	[0.102]	[0.090]	[0.080]	[0.123]
Observations	600	583	583	603	513	513	601
Endline control mean	0.034	0.016	0.022	0.015	0.018	0.022	0.193
p-values:							
Own = BAF	0.004	0.659	0.000	0.152	0.663	0.723	0.111
Own × MIL opposed = BAF × MIL opposed	0.041	0.163	0.105	0.019	0.668	0.014	0.080
Own + Own × MIL opposed = 0	0.705	0.622	0.543	0.220	0.061	0.366	0.332
BAF + BAF × MIL opposed = 0	0.000	0.203	0.000	0.001	0.074	0.005	0.006

Notes: All columns are fully-interacted regressions, where all covariates are interacted with MIL opposed to FP. The main effect of MIL opposition to FP at baseline is also included as a control variable. All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law, FP denotes family planning, and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table 5: Modern contraceptive use at endline

Outcome: **Using modern FP method**	All (1)	MIL opposed to FP (2)	Valued concealibility of FP method (3)	Found FP embarrassing to use (4)
			Covariate at baseline:	
Own Voucher	0.058	0.058	0.056	0.036
	[0.037]	[0.041]	[0.051]	[0.048]
BAF Voucher	0.059	0.022	0.011	-0.018
	[0.036]	[0.039]	[0.053]	[0.044]
Own Voucher × Covariate		-0.003	0.013	0.031
		[0.111]	[0.078]	[0.076]
BAF Voucher × Covariate		0.153	0.098	0.205**
		[0.121]	[0.075]	[0.085]
Observations	599	596	599	596
Endline control mean	0.123	0.123	0.123	0.123
p-values:				
Own = BAF	0.992	0.450	0.446	0.301
Own × Covariate = BAF × Covariate		0.288	0.351	0.074
Own + Own × Covariate = 0		0.595	0.242	0.260
BAF + BAF × Covariate = 0		0.126	0.042	0.011

Notes: All columns are fully-interacted regressions where all controls are interacted with the covariate used to examine heterogeneous effects; the main effect of the covariate is also included as a regressor. All columns also include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variable for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law, FP denotes family planning, and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table 6: Social network outcomes at endline

| | Network size | | Peers engagement Has peers in village that: | | Stigma |
	Number of close peers in village (1)	Number of close outside peers in village (2)	Accompanied to health facility (3)	Advised woman to use FP (4)	Afraid of being seen (5)
Own Voucher	-0.050	-0.026	-0.064	-0.030	-0.018
	[0.074]	[0.063]	[0.071]	[0.062]	[0.047]
BAF Voucher	0.133	0.102	0.114*	0.160**	-0.090**
	[0.084]	[0.070]	[0.066]	[0.065]	[0.041]
Observations	516	516	339	339	505
Endline control mean	0.635	0.357	0.550	0.339	0.239
p-value: Own = BAF	0.053	0.112	0.026	0.010	0.150

Notes: All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. FP denotes family planning, and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$

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Table 7: Heterogeneous treatment effects on social networks outcomes at endline

	Covariate at baseline:	
	---	---
	Lack of close peers in village that use FP	MIL opposed to FP
	(1)	(2)
A: Number of close peers in village		
Own Voucher	-0.318	-0.105
	[0.240]	[0.089]
BAF Voucher	-0.287	0.135
	[0.215]	[0.099]
Own Voucher × Covariate	0.244	0.308*
	[0.271]	[0.173]
BAF Voucher × Covariate	0.664***	0.018
	[0.246]	[0.230]
Observations	326	513
Endline control mean	0.635	0.635
p-values:		
Own = BAF	0.891	0.035
Own × Covariate = BAF × Covariate	0.125	0.282
Own + Own × Covariate = 0	0.559	0.172
BAF + BAF × Covariate = 0	0.002	0.462
B: Has peers in village that accompanied to health facility		
Own Voucher	-0.228*	-0.150*
	[0.133]	[0.086]
BAF Voucher	-0.002	0.078
	[0.206]	[0.076]
Own Voucher × Covariate	0.077	0.378**
	[0.184]	[0.173]
BAF Voucher × Covariate	0.175	0.458**
	[0.228]	[0.223]
Observations	222	336
Endline control mean	0.550	0.550
p-values:		
Own = BAF	0.278	0.016
Own × Covariate = BAF × Covariate	0.684	0.754
Own + Own × Covariate = 0	0.236	0.130
BAF + BAF × Covariate = 0	0.079	0.011

Notes: All columns are fully-interacted regressions where all controls are interacted with the covariate used to examine heterogeneous effects; the main effect of the covariate is also included as a regressor. All columns also include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variable for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law, FP denotes family planning, and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets.*$p < 0.1$,**$p < 0.05$,***$p < 0.01$.

Bring a Friend: Strengthening Women's Social Networks and Reproductive Autonomy in India

S Anukriti, Catalina Herrera-Almanza, and Mahesh Karra

A   Variable Definitions

1. Sought company to visit the ADC from someone: Indicator variable that equals one if a woman asked someone to accompany her to the ADC since September 2018. This variable is not conditional on visiting the ADC.

2. Sought company to visit the ADC from husband or mother-in-law: Indicator variable that equals one if at least one of the individuals that the woman invited to accompany her to the ADC is her husband or her mother-in-law.

3. Sought company to visit ADC from someone other than husband or mother-in-law (non-husband/mother-in-law): Indicator variable that equals one if at least one of the individuals that the woman invited to accompany her to the ADC is neither her husband nor her mother-in-law.

4. Sought company to visit ADC from sister-in-law: Indicator variable that equals one if at least one of the individuals that the woman invited to accompany her to the ADC is her sister-in-law.

5. Sought company to visit ADC from a non-relative: Indicator variable that equals if one of the individuals that the woman invited to accompany her to the ADC is a friend, neighbor, or any other peer that is not her relative.

6. Number of peers sought to visit the ADC: The number of people a woman asked to accompany her to the ADC since September 2018.

7. Visited the ADC for FP services: Indicator variable that equals one if a woman visited the ADC to obtain family planning services since September 2018.

8. Visited any clinic for FP services: Indicator variable that equals one if, since September 2018, the woman visited any health facility to obtain family planning services.

9. Visited the ADC alone: Indicator variable that equals one if a woman went alone to the ADC in all the visits she mentioned since September 2018. This variable equals zero either when the woman went with someone else in at least one FP visit or when she did not visit the ADC.[58]

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[58]Phone surveys are included in this variable.

10. Visited the ADC with husband or mother-in-law: Indicator variable that equals one if a woman went with her husband or mother-in-law in at least one of her visits to the ADC since September 2018. The variable equals zero when a woman i) visited the ADC alone, ii) visited the ADC with individuals different from her husband or her mother-in-law, or iii) did not visit the ADC.[59]

11. Visited the ADC with someone other than husband or mother-in-law (non-husband/mother-in-law): Indicator variable that equals one if a woman went with individuals other than her husband or her mother-in-law in at least one of her visits to the ADC since September 2018. The variable equals zero when a woman i) visited the ADC alone, ii) visited the ADC with her husband or her mother-in-law, or iii) did not visit the ADC.[60]

12. Using modern FP method: Indicator variable that equals one if a woman is using a modern contraceptive method at the time of endline survey.[61]

13. Using any FP method: Indicator variable that equals one if a woman is using either a traditional or a modern contraceptive method at the time of endline survey. [62]

14. Number of close peers in village: The number of individuals a woman reports, at endline, with whom she discusses relatively more private matters like reproductive health, fertility, and family planning, and who live in the same village as her.

15. Number of close outside peers in village: The number of individuals a woman reports, at endline, with whom she discusses relatively more private matters like reproductive health, fertility, and family planning, and who live in the same village as her but not in the same household.

16. Has peers in village that accompanied to health facility: Indicator variable that equals one if a woman reported, at endline, that she has at least one close peer in her village that accompanied her to the health facility. This variable is conditional on having at least one close peer in her village.

17. Has peers in village that advised to use FP: Indicator variable that equals one if a woman reported, at endline, that she has at least one close peer in her village that had ever advised her to a use family planning method. This variable is conditional on having at least one close peer in her village.

18. Afraid of being seen: Indicator variable that equals one if a woman is afraid of being seen by someone she knows at the family planning facility. This is our "fear of stigma" variable, which is measured at endline.

19. Negative experience with FP: Indicator variable that equals one if a woman faced any problems or negative experiences from discussing, accessing, or using a method of family planning as reported at endline.

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[59]Phone surveys are excluded from this variable.

[60]Phone surveys are excluded from this variable.

[61]Modern methods include female sterilization, male sterilization, IUD/PPIUD, injectables, implants, pill, condom, female condom, emergency contraception, diaphragm, foam/jelly, standard day method, or any other modern method.

[62]Traditional methods include lactational amenorrhea method, rhythm method, withdrawal, and any other traditional method.

20. Satisfaction with sex life: Indicates, on a scale from 1 to 10, the woman's satisfaction with her sex life at endline, with 1 being extremely dissatisfied and 10 being extremely satisfied.

21. Marital satisfaction: Indicates, on a scale from 1 to 10, the woman's satisfaction with her marriage overall at endline, with 1 being extremely dissatisfied and 10 being extremely satisfied.

22. Age: a woman's completed age in years at baseline.

23. Years of schooling: a woman's completed years of school attainment at baseline.

24. Wants another child: Indicator variable that equals one if a woman wants another child at baseline.

25. Wants another son: Indicator variable that equals one if a woman wants another son at baseline.

26. Number of general peers: Number of individuals a woman reports with whom she discusses her personal affairs related to issues such as children's illness, schooling, health, work, and financial support at baseline.

27. Hindu: Indicator variable that equals one if a woman practices Hinduism at baseline.

28. SC or ST: Indicator variable that equals one if the woman belongs to a Scheduled Caste or a Scheduled Tribe at baseline.

29. OBC: Indicator variable that equals one if the woman belongs to an Other Backward Class at baseline.

30. Wears ghunghat: Indicator variable that equals one if a woman practices ghunghat at baseline.

31. Worked last year: Indicator variable that equals one if a woman worked last year at baseline.

32. Mobility Score: Calculated as the sum of six indicator variables for whether a woman is allowed to visit/go alone the following places at baseline: 1) homes of relatives or friends, 2) health facilities, 3) grocery stores, 4) short distances by bus or train, 5) markets, and 6) outside their villages or communities.

33. Ever visited a clinic for FP: Indicator variable that equals one if a woman has ever visited a health clinic or facility for reproductive health, fertility, or family planning services at baseline.

34. Asset Index: Household-level index constructed using principal component analysis using with the following household variables: source of drinking water, type of toilet facility, floor material, roof material, exterior wall material, type of fuel used for cooking, ownership of animals, and the number of rooms in the household used to sleep. This variable is constructed at baseline.

35. Number of children: Total number of alive children a woman had at the time of the baseline survey.

36. At least one son: Indicator variable that equals one if the woman had at least one son at the time of baseline survey.

37. Co-residence with mother-in-law: Indicator variable that equals one if a woman co-resides with her mother-in-law at the time of baseline survey.

38. MIL opposed to FP: Indicator variable that equals one if a woman expressed at baseline that one of the disadvantages of using FP is that her mother-in-law is opposed to it.

39. Valued concealability of FP method: Indicator variable that equals one if a woman expressed at baseline that one of the most important features of a contraceptive method is that it can be used without anyone else knowing.

40. Found FP embarrassing to use: Indicator variable that equals one if, at baseline, a woman expressed that one of the disadvantages of using family planning is that it is embarrassing to use.

41. Lack of close peers in village that use FP: Indicator variable that equals one if none of the woman's close peers in her village at baseline were using a family planning method at baseline.

42. Poor: Indicator variable that equals one if, at baseline, a woman's household is below the poverty line and in the bottom two terciles of the asset index distribution, and is zero otherwise.

B   Appendix Figures and Tables

Figure A.1: Study area

Figure A.2: Sample selection

2,781 households listed across 28 villages in Jaunpur district

→ 1,337 — *No eligible married women aged 18-30*

Final HH Listing: 1,444 households with married women aged 18-30

→ 172 — *Did not approach HH for logistic / budget reasons*

1,272 households approached for baseline survey

→ 574 — *Did not meet other eligibility criteria*

698 households with eligible women

→ 5 — *Did not consent to participate*

692 eligible women who consented to be part of the study

→ 21 — *Did not complete survey (e.g., found to be ineligible during survey)*

BASELINE SAMPLE: 671 eligible women from 28 villages in Jaunpur

Figure A.3: Map of treatment and control women

Note: This figure shows the location of our partner clinic, the ADC, and of women in the three treatment arms in 28 villages of Jaunpur, Uttar Pradesh.

Figure A.4: Information brochure

Long-Acting Methods

These family planning methods are typically effective for more than 6 months.

Implants (Jadelle)

Intrauterine Contraceptive Device (IUCD)

Talk to your health provider and visit your local family planning clinic today!

Effectively planning your family today may improve your health, your children's health, and your family's future tomorrow.

Visit your local family planning clinic today to learn more

This guide was developed as part of the Janpur Social Networks Family Planning Study
Department of Geography
Delhi School of Economics, University of Delhi
E-mail: **pkpathak@geography.du.ac.in**

About Fertility, Healthy Birth Spacing, and Family Planning

A Guide for Couples

Your Return to Fertility

- A new mother can become pregnant again as soon as 3 weeks after her delivery!

- Family planning through breastfeeding can help prevent pregnancy for up to 6 months

- **Three** requirements for using breastfeeding as family planning correctly:
    1. Continuous, exclusive breastfeeding
    2. No return of menses (period)
    3. Up to 6 months postpartum only

- Mothers who are not breastfeeding are recommended to start a family planning method after 3 weeks from delivery.

- You should wait at least **2 years** before trying to get pregnant again

If you just had a baby, when is a good time to start a family again?

Images for this guide were obtained from: alamy, iStock, shutterstock, and Google Image search.

Why should you wait for 2 years?

- Mothers who wait for two years are less likely to die from childbirth.

- Children who are healthily spaced are:
    - Less likely to die during childbirth
    - Less likely to be born prematurely
    - Less likely to be underweight
    - More likely to grow up bigger and healthier

How can you healthily space and time your next birth?

Correctly and consistently use a family planning method of your choice

---

Short-Acting Methods

These family planning methods are typically effective at the point of use and for less than 6 months.

Condoms (Male or Female)

Oral Contraceptive Pills

Injectable Contracpetive (Depo-Provera)

Figure A.5: Voucher - English

Jaunpur Social Networks Study – Clinic Voucher

[INSERT CLIENT PHOTO HERE]

This voucher covers the cost of **family planning services** at the **ADC Clinic** for up to **Rs**. **2000**. The voucher can only be redeemed for family planning services at the ADC Clinic. For more information, refer to the JSNS Terms of Services. The date of expiration of this voucher is:

_____ / _____ / _____ (DD / MM / YY)

To redeem this voucher, or if you have any questions or concerns, please call Ms. Field Manager 1 or Ms. Field Manager 2 at:

Field Manager 1: +91 XXX   **Field Manager 2: +91 XXX**

Client Name:

Client Program ID:

Client Phone Number:

Date: _____ / _____ / _____   (DD / MM / YY)

MANAGER USE ONLY

DATE RECEIVED	AMOUNT SPENT	VOUCHER VALUE LEFT	MANAGER SIGNATURE
	₹	₹	

UNIVERSITY OF DELHI

Table A.1: Balance at baseline: Additional variables

	Control (C)		Own		BAF		C - Own	C - BAF	Own - BAF
	N	Mean/SD	N	Mean/SD	N	Mean/SD	Diff.	Diff.	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Poor	346	0.168	153	0.150	158	0.165	0.017	0.003	-0.014
		(0.374)		(0.359)		(0.372)			
Marital duration	343	7.219	153	7.288	159	7.509	-0.069	-0.291	-0.222
		(3.502)		(3.542)		(3.904)			
Has at least one son	350	0.743	156	0.744	165	0.679	-0.001	0.064	0.065
		(0.438)		(0.438)		(0.468)			
Valued concealability of FP	350	0.514	156	0.474	165	0.467	0.040	0.048	0.008
		(0.501)		(0.501)		(0.500)			
Found FP embarrassing to use	349	0.367	154	0.377	164	0.293	-0.010	0.074*	0.084
		(0.483)		(0.486)		(0.456)			
Number of close outside peers	350	0.257	156	0.250	165	0.279	0.007	-0.022	-0.029
		(0.493)		(0.477)		(0.513)			
Lack of close peers in village that use FP[a]	225	0.733	99	0.717	103	0.670	0.016	0.063	0.047
		(0.443)		(0.453)		(0.473)			
Last visit to any FP clinic was with husband or MIL	338	0.263	155	0.284	162	0.278	-0.021	-0.014	0.006
		(0.441)		(0.452)		(0.449)			
F-test of joint significance: p-value							0.731	0.429	0.533
F-test: Observations							314	317	199

Notes: Standard deviations (SD) are in parentheses. BAF denotes Bring-a-Friend, FP denotes family planning, and MIL denotes mother-in-law. [a] indicates that the variable is conditional on having at least one close peer at baseline. Variable definitions are in Online Appendix. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$

Table A.2: Balance at baseline by attrition

	Non-attritor		Attritor		Non-attritor – Attritor
	N	Mean/SD	N	Mean/SD	Difference
	(1)	(2)	(3)	(4)	(5)
Own Voucher	625	0.234	46	0.217	0.016
		(0.423)		(0.417)	
BAF Voucher	625	0.250	46	0.196	0.054
		(0.433)		(0.401)	
Age	625	25.718	46	25.043	0.675*
		(2.663)		(2.422)	
Years of schooling	625	9.574	46	8.913	0.661
		(4.445)		(4.760)	
Hindu	625	0.931	46	0.978	-0.047*
		(0.253)		(0.147)	
Scheduled Caste or Tribe	625	0.435	46	0.543	-0.108
		(0.496)		(0.504)	
Other Backward Class	625	0.446	46	0.326	0.120
		(0.498)		(0.474)	
Wears ghunghat	625	0.891	46	0.783	0.109*
		(0.312)		(0.417)	
Worked last year	621	0.138	45	0.178	-0.039
		(0.346)		(0.387)	
Co-residence with MIL	625	0.683	46	0.609	0.075
		(0.466)		(0.493)	
Mobility score	625	0.870	46	1.261	-0.390
		(1.602)		(2.134)	
Asset score	625	0.026	46	-0.356	0.382
		(1.635)		(1.556)	
Number of general peers	625	1.658	46	1.522	0.136
		(1.035)		(0.888)	
Number of close peers inside village	625	0.554	46	0.543	0.010
		(0.626)		(0.585)	
Number of children	625	1.960	46	1.870	0.090
		(0.923)		(0.909)	
Wants another child	621	0.493	46	0.565	-0.072
		(0.500)		(0.501)	
Using any FP method	624	0.486	46	0.348	0.138*
		(0.500)		(0.482)	
Using modern FP method	624	0.186	46	0.087	0.099**
		(0.389)		(0.285)	
Ever visited a clinic for FP	625	0.358	46	0.261	0.098
		(0.480)		(0.444)	
MIL opposed to FP	621	0.163	46	0.043	0.119***
		(0.369)		(0.206)	
F-test of joint significance: p-value					0.241
F-test: Observations					657

Notes: Standard deviations (SD) are in parentheses. BAF denotes Bring-a-Friend, FP denotes family planning, and MIL denotes mother-in-law. Variable definitions are in the Online Appendix. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$

Table A.3: Balance at baseline by phone survey

	In-person		Phone		In-person – Phone
	N (1)	Mean/SD (2)	N (3)	Mean/SD (4)	Difference (5)
Own Voucher	541	0.233 (0.423)	123	0.220 (0.416)	0.013
BAF Voucher	541	0.238 (0.427)	123	0.285 (0.453)	-0.046
Age	541	25.601 (2.623)	123	26.024 (2.744)	-0.424
Years of schooling	541	9.616 (4.400)	123	9.252 (4.721)	0.363
Hindu	541	0.933 (0.249)	123	0.935 (0.248)	-0.002
Scheduled Caste or Tribe	541	0.449 (0.498)	123	0.407 (0.493)	0.043
Other Backward Class	541	0.429 (0.495)	123	0.488 (0.502)	-0.059
Wears ghunghat	541	0.882 (0.323)	123	0.894 (0.309)	-0.013
Worked last year	537	0.140 (0.347)	122	0.131 (0.339)	0.009
Co-residence with MIL	541	0.673 (0.470)	123	0.699 (0.460)	-0.026
Mobility score	541	0.935 (1.686)	123	0.772 (1.487)	0.163
Asset score	541	0.031 (1.660)	123	-0.124 (1.490)	0.155
Number of general peers	541	1.682 (1.030)	123	1.520 (1.019)	0.162
Number of close peers inside village	541	0.545 (0.618)	123	0.593 (0.651)	-0.048
Number of children	541	1.928 (0.888)	123	2.041 (0.995)	-0.113
Wants another child	537	0.501 (0.500)	123	0.480 (0.502)	0.021
Using any FP method	540	0.470 (0.500)	123	0.488 (0.502)	-0.017
Using modern FP method	540	0.169 (0.375)	123	0.220 (0.416)	-0.051
Ever visited a clinic for FP	541	0.342 (0.475)	123	0.390 (0.490)	-0.048
MIL opposed to FP	539	0.148 (0.356)	121	0.190 (0.394)	-0.042
F-test of joint significance: p-value					0.569
F-test: Observations					650

Notes: Standard deviations (SD) are in parentheses. BAF denotes Bring-a-Friend, FP denotes family planning, and MIL denotes mother-in-law. Variable definitions are in the Online Appendix. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

Table A.4: Descriptive statistics: Estimation sample

	Count (1)	Mean (2)	SD (3)	Min (4)	Max (5)
Endline variables					
Number of peers invited to the ADC	612	0.22	0.63	0	6
Sought company to visit the ADC from:					
Someone	612	0.15	0.36	0	1
Husband or MIL[a]	595	0.03	0.17	0	1
Someone other than husband or MIL[a]	595	0.10	0.31	0	1
Sister-in-law[a]	595	0.06	0.23	0	1
Non-relative [a]	595	0.04	0.18	0	1
Number of close peers in village[a]	523	0.65	0.71	0	3
Number of close outside peers in village[a]	523	0.37	0.60	0	3
Afraid of being seen at a health facility[a]	512	0.21	0.41	0	1
Visited the ADC for FP	615	0.11	0.31	0	1
Visited any clinic for FP	613	0.26	0.44	0	1
Visited the ADC:					
Alone	615	0.03	0.17	0	1
With husband or MIL[a]	523	0.04	0.19	0	1
With someone other than husband or MIL[a]	523	0.05	0.23	0	1
Currently using FP	608	0.39	0.49	0	1
Currently using modern FP	608	0.15	0.36	0	1
Baseline variables					
Years of schooling	615	9.57	4.45	0	15
Currently using FP	614	0.48	0.50	0	1
Wants another child	611	0.49	0.50	0	1
Number of general peers	615	1.65	1.03	0	7
Age	615	25.74	2.66	18	30
Hindu	615	0.93	0.25	0	1
Scheduled Caste or Tribe	615	0.43	0.50	0	1
Other Backward Class	615	0.45	0.50	0	1
Wears ghunghat	615	0.89	0.31	0	1
Worked last year	611	0.14	0.35	0	1
Mobility score	615	0.88	1.61	0	6
Ever visited a clinic for FP	615	0.36	0.48	0	1
Asset score	615	0.02	1.64	-4	4
MIL opposed to FP	612	0.16	0.37	0	1
Values concealability of an FP method	615	0.50	0.50	0	1
Finds FP embarrassing to use	612	0.35	0.48	0	1
Lack of close peers in village that use FP[b]	395	0.72	0.45	0	1
Poor	602	0.16	0.37	0	1

Notes: This table presents summary statistics for the Treatment-on-the-Treated sample of 615 women used in the analysis. MIL denotes mother-in-law and FP denotes family planning. Variable definitions are in Online Appendix. [a] indicates missing values due to phone survey, [b] indicates that the variable is conditional on having at least one close peer at baseline.

Table A.5: Sought company to visit the ADC during the intervention period

	(1)	(2)	(3)	(4)
A: Sought company from someone				
Own Voucher	0.160***	0.161***	0.160***	0.173***
	[0.035]	[0.035]	[0.034]	[0.035]
BAF Voucher	0.328***	0.328***	0.334***	0.356***
	[0.040]	[0.040]	[0.040]	[0.039]
Observations	612	607	603	603
Endline control mean	0.034	0.034	0.034	0.034
p-value: Own = BAF	0.001	0.001	0.001	0.000
B: Sought company from husband or mother-in-law				
Own Voucher	0.037*	0.038*	0.038*	0.040*
	[0.021]	[0.021]	[0.021]	[0.022]
BAF Voucher	0.026	0.027	0.026	0.032*
	[0.018]	[0.018]	[0.018]	[0.019]
Observations	595	590	586	586
Endline control mean	0.016	0.016	0.016	0.016
p-value: Own = BAF	0.668	0.660	0.641	0.783
C: Sought company from someone other than husband or mother-in-law				
Own Voucher	0.084***	0.086***	0.090***	0.099***
	[0.028]	[0.028]	[0.028]	[0.028]
BAF Voucher	0.265***	0.267***	0.276***	0.291***
	[0.039]	[0.038]	[0.039]	[0.038]
Observations	595	590	586	586
p-value: Own = BAF	0.000	0.000	0.000	0.000
Endline control mean	0.022	0.022	0.022	0.022
Balancing controls	No	Yes	Yes	Yes
Other balancing covariates	No	No	Yes	Yes
Village FE	No	No	No	Yes

Notes: Balancing controls are the baseline variables used to balance randomization, i.e., whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module. Other baseline covariates comprise baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score and asset index. Variable definitions are in Online appendix. Robust standard errors are in brackets. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table A.6: Number and composition of peers invited to visit the ADC

	(1)	(2)	(3)	(4)
A: Number of peers sought				
Own Voucher	0.180***	0.181***	0.187***	0.204***
	[0.048]	[0.047]	[0.046]	[0.047]
BAF Voucher	0.509***	0.510***	0.531***	0.561***
	[0.081]	[0.080]	[0.082]	[0.081]
Observations	612	607	603	603
Endline control mean	0.050	0.050	0.050	0.050
p-value: Own = BAF	0.000	0.000	0.000	0.000
B: Sought company from sister-in-law				
Own Voucher	0.050**	0.051**	0.051**	0.053***
	[0.020]	[0.020]	[0.020]	[0.020]
BAF Voucher	0.179***	0.180***	0.181***	0.186***
	[0.032]	[0.032]	[0.033]	[0.032]
Observations	595	590	586	586
Endline control mean	0.003	0.003	0.003	0.003
p-value: Own = BAF	0.001	0.001	0.001	0.000
C: Sought company from a non-relative				
Own Voucher	0.021	0.021	0.026	0.031*
	[0.016]	[0.016]	[0.017]	[0.017]
BAF Voucher	0.089***	0.089***	0.099***	0.103***
	[0.025]	[0.026]	[0.027]	[0.028]
Observations	595	590	586	586
Endline control mean	0.009	0.009	0.009	0.009
p-value: Own = BAF	0.020	0.020	0.015	0.011
Balancing controls	No	Yes	Yes	Yes
Other balancing covariates	No	No	Yes	Yes
Village FE	No	No	No	Yes

Notes: Balancing controls are the baseline variables used to balance randomization, i.e., whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module. Other baseline covariates comprise baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and asset index. Variable definitions are in Online appendix. Robust standard errors are in brackets. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.7: Clinic visits for family planning services during the intervention period

	(1)	(2)	(3)	(4)
A: Visited the ADC				
Own Voucher	0.213***	0.211***	0.210***	0.208***
	[0.036]	[0.036]	[0.036]	[0.035]
BAF Voucher	0.175***	0.174***	0.173***	0.190***
	[0.033]	[0.032]	[0.033]	[0.033]
Observations	615	610	606	606
Endline control mean	0.015	0.015	0.015	0.015
p-value: Own = BAF	0.430	0.440	0.439	0.702
B: Visited any clinic				
Own Voucher	0.174***	0.174***	0.176***	0.179***
	[0.047]	[0.047]	[0.047]	[0.047]
BAF Voucher	0.104**	0.103**	0.104**	0.125***
	[0.043]	[0.043]	[0.044]	[0.045]
Observations	613	608	604	604
Endline control mean	0.193	0.193	0.193	0.193
p-value: Own = BAF	0.201	0.205	0.198	0.336
Balancing controls	No	Yes	Yes	Yes
Other balancing covariates	No	No	Yes	Yes
Village FE	No	No	No	Yes

Notes: Balancing controls are the baseline variables used to balance randomization, i.e., whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module. Other baseline covariates comprise baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and asset index. FP denotes family planning. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.8: Number of clinic visits for family planning services during the intervention period

	(1)	(2)	(3)	(4)
A: Number of visits to the ADC				
Own Voucher	0.333***	0.329***	0.337***	0.292***
	[0.100]	[0.101]	[0.110]	[0.078]
BAF Voucher	0.288***	0.285***	0.287***	0.298***
	[0.081]	[0.080]	[0.079]	[0.082]
Observations	615	610	606	606
Endline control mean	0.074	0.074	0.074	0.074
p-value: Own = BAF	0.711	0.721	0.690	0.955
B: Number of visits to any clinic				
Own Voucher	0.169*	0.163*	0.166*	0.190**
	[0.089]	[0.090]	[0.091]	[0.093]
BAF Voucher	0.135	0.131	0.123	0.138
	[0.113]	[0.113]	[0.108]	[0.109]
Observations	607	602	598	598
Endline control mean	0.339	0.339	0.339	0.339
p-value: Own = BAF	0.785	0.796	0.718	0.650
Balancing controls	No	Yes	Yes	Yes
Other balancing covariates	No	No	Yes	Yes
Village FE	No	No	No	Yes

Notes: Balancing controls are the baseline variables used to balance randomization, i.e., whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module. Other baseline covariates comprise baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and asset index. FP denotes family planning. Variable definitions are in Online Appendix. Robust standard errors are in brackets. *$p < 0.1$,**$p < 0.05$,***$p < 0.01$.

Table A.9: Heterogeneous treatment effects on clinic visits for family planning services

	Covariate at baseline:		
Outcome:	Wanted another child	Had at least one son	Had ever visited a clinic for FP
Visited any clinic	(1)	(2)	(3)
Own Voucher	0.311***	0.026	0.122**
	[0.069]	[0.094]	[0.059]
BAF Voucher	0.193***	0.112	0.138**
	[0.065]	[0.085]	[0.058]
Own Voucher × Covariate	-0.218**	0.195*	0.136
	[0.096]	[0.110]	[0.111]
BAF Voucher × Covariate	-0.117	0.063	0.014
	[0.095]	[0.102]	[0.094]
Observations	604	604	604
Endline control mean	0.193	0.193	0.193
p-values:			
Own = BAF	0.145	0.395	0.818
Own × Covariate = BAF × Covariate	0.371	0.285	0.331
Own + Own × Covariate = 0	0.165	0.000	0.007
BAF + BAF × Covariate = 0	0.277	0.002	0.042

Notes: All columns are fully-interacted regressions where all controls are interacted with the covariate used to examine heterogeneous effects; the main effect of the covariate is also included as a regressor. All columns also include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variable for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. FP denotes family planning, and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table A.10: Heterogeneous treatment effects on type of peers sought, by mother-in-law opposition to family planning

	Sought company to visit the ADC from:	
	Sister-in-law	Non-relative
	(1)	(2)
Own Voucher	0.053**	0.019
	[0.022]	[0.018]
BAF Voucher	0.167***	0.101***
	[0.034]	[0.031]
Own Voucher × MIL opposed to FP	-0.014	-0.011
	[0.051]	[0.024]
BAF Voucher × MIL opposed to FP	0.131	0.020
	[0.106]	[0.075]
Observations	583	583
Endline control mean	0.003	0.009
p-values:		
Own = BAF	0.003	0.009
Own × MIL opposed = BAF × MIL opposed	0.205	0.672
Own + Own × MIL opposed = 0	0.409	0.625
BAF + BAF × MIL opposed = 0	0.003	0.078

Notes: All columns are fully-interacted regressions, where all the covariates are interacted with MIL opposed to FP. The main effect of MIL opposition to FP at baseline is also included as a control variable. All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law, FP denotes family planning, and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table A.11: Contraceptive use at endline

	(1)	(2)	(3)	(4)
A: Using any FP method				
Own Voucher	0.011	0.005	0.011	0.006
	[0.050]	[0.050]	[0.050]	[0.051]
BAF Voucher	0.009	0.004	-0.004	-0.011
	[0.048]	[0.047]	[0.047]	[0.049]
Observations	608	603	599	599
p-value: Own = BAF	0.970	0.975	0.787	0.775
Endline control mean	0.382	0.382	0.382	0.382
B: Using modern FP method				
Own Voucher	0.063*	0.059	0.054	0.058
	[0.038]	[0.037]	[0.036]	[0.037]
BAF Voucher	0.069*	0.066*	0.049	0.059
	[0.037]	[0.036]	[0.036]	[0.036]
Observations	608	603	599	599
Endline control mean	0.123	0.123	0.123	0.123
p-value: Own = BAF	0.891	0.881	0.915	0.992
Balancing controls	No	Yes	Yes	Yes
Other balancing covariates	No	No	Yes	Yes
Village FE	No	No	No	Yes

Notes: Balancing controls refer to whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module. Other baseline covariates are baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index. FP denotes family planning. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table A.12: Backlash effects

	Negative experience with FP	Satisfaction with sex life	Marital satisfaction
	(1)	(2)	(3)
Own Voucher	-0.022	0.213	0.140
	[0.027]	[0.196]	[0.209]
BAF Voucher	0.010	0.297	0.198
	[0.032]	[0.210]	[0.202]
Observations	494	504	510
Endline control mean	0.076	8.207	8.763
p-value: Own = BAF	0.358	0.718	0.810

Notes: All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. MIL denotes mother-in-law and BAF denotes bring-a-friend. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table A.13: Heterogeneous treatment effects of voucher by baseline financial constraints

	Visited the ADC	Visited any clinic	Using a modern FP method
	(1)	(2)	(3)
Any Voucher	0.190***	0.154***	0.036
	[0.029]	[0.042]	[0.034]
Any Voucher × Poor	0.134	0.078	0.191**
	[0.084]	[0.111]	[0.094]
Observations	593	591	586
Endline control mean	0.015	0.193	0.123
p-value:			
Any Voucher + Any Voucher × Poor = 0	0.000	0.025	0.010

Notes: Any Voucher equals one if the woman received either an Own or a Bring-a-friend voucher, and zero otherwise. All columns are fully-interacted regressions, where all covariates are interacted with Poor at baseline. The main effect of Poor at baseline is also included as a control variable. All columns include balancing controls (i.e., the baseline variables used to balance randomization–whether a woman is currently using family planning, her years of education, whether she wants another child, and the number of peers she mentions in the social networks module), other baseline covariates (i.e., baseline values of woman's age, indicator variables for Hindu, SC-ST, OBC, whether the woman works, wears ghunghat, and had ever visited a family planning clinic, her mobility score, and her asset index) and village fixed effects. Variable definitions are in Online Appendix. Robust standard errors are in brackets. $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table A.14: Robustness checks

	Sought company to visit the ADC from Non-husband/MIL	Visited the ADC with Non-husband/MIL	Visited the ADC	Visited any clinic	Use modern FP method	Number of close peers in village
	(1)	(2)	(3)	(4)	(5)	(6)
Own Voucher	0.099	0.065	0.208	0.179	0.058	-0.050
Robust (p-value)	(0.000)	(0.016)	(0.000)	(0.000)	(0.116)	(0.499)
Clustered (p-value)	(0.001)	(0.024)	(0.000)	(0.003)	(0.103)	(0.393)
WC Bootstrap (p-value)	(0.001)	(0.008)	(0.000)	(0.000)	(0.132)	(0.385)
MHT Correction (p-value)	(0.026)	(0.178)	(0.000)	(0.003)	(0.243)	(0.508)
BAF Voucher	0.291	0.079	0.190	0.125	0.059	0.133
Robust (p-value)	(0.000)	(0.005)	(0.000)	(0.006)	(0.106)	(0.114)
Clustered (p-value)	(0.000)	(0.048)	(0.000)	(0.025)	(0.050)	(0.060)
WC Bootstrap (p-value)	(0.000)	(0.019)	(0.000)	(0.036)	(0.040)	(0.095)
MHT Correction (p-value)	(0.026)	(0.178)	(0.000)	(0.003)	(0.243)	(0.508)

Notes: p-values in parentheses. *Robust* represents p-values from robust standard errors. *Clustered* represents p-values based on standard errors clustered at the village level. *WC Bootstrap* reports the p-values based on wild clustered bootstrapped standard errors, obtained from the *boottest* command in Stata. *MHT correction* denotes p-values obtained after correcting for multiple hypotheses testing using the *mhtexp* command in Stata. MIL denotes mother-in-law and FP denotes family planning. Variable definitions are in Online Appendix.

C   Additional Acknowledgments