The role of the mother-in-law and social norms in the demand for maternal health services: Evidence from a field experiment in India

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ABSTRACT

This paper investigates the impact of differentiated health messaging and social learning on antenatal care (ANC) visits and Iron and Folic Acid (IFA) tablet consumption for pregnant women or daughters-in-law using a randomized controlled trial in India. Specifically, we examine providing information to pregnant daughters-in-law in private or jointly with their co-residing mothers-in-law in the context of traditional multigenerational households, characterized by low female agency, high conformity to gender norms, and collective health decision-making. In a field experiment conducted in the Indian state of Madhya Pradesh, we cross-randomized health information delivery on the importance of ANC visits and IFA along two social dimensions. First, we varied at the individual level, randomizing each pregnant women to receive information either jointly with her mother-in-law or without her mother-in-law. We further varied delivery at the village-level, with information delivered either privately within the household or else jointly along with others in the village, to distinguish the effect of private information from social messaging. We hypothesize that the effects on our outcomes are larger at the individual level with the mother-in-law present since they control decision-making in the household and potentially smaller effects in group settings because of deep-seated traditional norms. We document three key findings: 1) information delivery increased knowledge of antenatal care and IFA consumption across all treatments immediately after the intervention, 2) private information to the pregnant daughter-in-law alone or with their mother-in-law results in an increase in ANC visits in the short-term whereas we find no effects of the group information treatment in the short-term, and 3) information interventions improved post-delivery maternal and infant health outcomes subsequently.

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0.1 Introduction

Maternal mortality is the leading cause of daily deaths of almost 810 otherwise healthy women of childbearing age worldwide (WHO (2024)). India is one of 10 countries that account for 60 percent of global maternal deaths, stillbirths, and newborn deaths (UNICEF (2023)). In recent years, India has made considerable progress in improving its maternal mortality rate (MMR) NFHS (2016)). However, the MMR still remains high at 113 per 100,000 live births in 2016-2018 and is a significant policy priority. Significant disparities in deaths persist across the country, with a large proportion of deaths concentrated in the rural regions of poorer states (NFHS (2016)). Globally and in India, the three leading causes of maternal mortality are postpartum hemorrhage, sepsis, and hypertensive disorders such as preeclampsia and eclampsia. Several studies have demonstrated that adequate antenatal care (ANC) can easily prevent these conditions (Gupta et al. (2010); Kassebaum et al. (2016); Meh et al. (2022); Montgomery et al. (2014); Peña-Rosas et al. (2015)). Despite the Indian government's provision of free and accessible antenatal care, the number of antenatal visits remains extremely low.

In this paper, we study two questions: Is it possible to increase perinatal health behaviors, in particular the number of ANC visits and the consumption of iron and folic acid (IFA) tablets, by providing health information to either the daughter-in-law or mother-in-law in the household? In India, where social norms play a significant role, does take-up of health behaviors differ when information is provided individually (in private) or in groups (in public)?

We investigate the role of the mother-in-law and social norms together for three distinct reasons. First, sample survey data from India shows that women who are not as involved in household decision-making, travel unaccompanied to healthcare facilities, and whose families are unlikely to think ANC visits are important are less likely to make these visits (Ogbo et al. (2019)). Second, India's patrilocal society provides a unique opportunity to study how other household members, particularly the mother-in-law, influence health, mobility, and resource decisions for young women (Allendorf (2017); Anukriti et al. (2019, 2022); Banerji et al. (2023); Ghosh and Thornton (2024); Khanna and Pandey (2020); Varghese and Roy (2019)). Finally, social learning or learning from peers is especially important in low and middle-income countries (LMICs), where limited access to health information leads individuals to rely heavily on learning from others for decision-making (Bursztyn et al. (2018); Bursztyn and Jensen (2017); Chandrasekhar et al. (2018); Karing (2019)). These networks play a crucial role in maintaining social norms or promoting behavior change.

To investigate whether we can increase ANC visits through information, we conduct a randomized controlled trial in 249 villages across three districts in the central Indian state of Madhya Pradesh between 2022 and 2023. Madhya Pradesh has one of the highest MMRs of states in India, 173 deaths per 100,000 making this a context where marginal improve-

ments in ANC visits, could improve health outcomes. In our experimental design, we vary whether health information on the importance of completing ANC visits is provided to only the daughter-in-law (only DIL treatment) or to both the daughter-in-law, and the mother-in-law (DIL+MIL treatment). We also vary whether the information is provided in private (Individual treatment) or in public setting (Group treatment). The study involves 2409 households across three districts. Our treatment provides health information on regularly going for ANC visits, and consuming IFA tablets to reduce the risk of anemia and birth defects. Previous pilot work as well as the baseline survey show that women either underestimate or have incorrect prior beliefs about the benefits of ANC, and the consumption of IFA tablets is associated with strong beliefs that they cause harm to the mother and baby due to their side effects. As a result, our treatment uses a counseling style script and our trainers spent time encouraging conversation and a discussion around priors about these behaviors. Our study also has a few other aspects: 1) to prevent mothers-in-law intervening during the 'Only DIL' treatments, we provided them placebo health information on COVID-19 to keep them engaged during the same time, 2) we offered all participants a flyer to sign to commit to attending an ANC and health information visit at the hospital immediately after the intervention; 3) Information effects tend to taper over time so we play an engaging recorded message to the participants during the midline as a reminder. Finally, we collect outcomes at two points in time: a midline survey approximately a month and a half after the initial intervention to measure short-term effects, and an endline survey after the participants have given birth to measure longer-term outcomes.

We measure three primary outcomes: ANC and IFA knowledge, and self-reported number of ANC visits completed, and IFA tablet consumption. We also consider the following secondary outcomes: post-intervention flyer signed, self-reported visit to the district hospital, pregnancy, birth and perinatal maternal and infant complications. From a policy perspective, we are interested in understanding whether involving the MIL improves ANC visits and IFA, and whether group or public settings are the best to disseminate health information, which is often the case in India.

We find immediate significant improvements at midline in ANC and IFA knowledge, measured by a standardized index, for both DILs and MILs in both Individual and Group treatments. The effects were higher in magnitude for DILs in the Group treatment compared to Individual, although this difference is not significant. We see a 0.28 standard deviation (sd) increase in knowledge, closely followed by the MIL. However, at endline, the individual treatment effects strengthened, whereas the group treatment effects decreased for DILs but remained stable for MILs. Cross-randomized treatment arms showed similar trends, with DILs in the individual treatment arms displaying even stronger knowledge gains at endline. Interestingly, MILs exhibited knowledge increases even in treatment arms where they were not directly treated, suggesting knowledge transfer from DILs. Overall, DILs learned more when grouped with other DILs, while MILs showed significant knowledge gains even when not included in the treatment, providing evidence of intergenerational bargaining in

the household.

For ANC visits and IFA tablet consumption, the Individual treatment led to a quick increase in ANC visits at midline, significantly outperforming the Group treatment. However, by endline, the Group treatment caught up, suggesting that Individual treatment boosts short-term gains while Group can take time to effect changes. For IFA tablet consumption, the Group treatment showed significant gains at both midline and endline, indicating that peer effects play a crucial role in overcoming initial resistance to IFA consumption. The Individual treatment, however, did not produce significant changes in IFA consumption, reinforcing the importance of peers in health behavior change. Overall, we see more improvements in behavior when the MIL is involved in addition to the DIL and the least when DILs are treated on their own suggesting the decision-making power of the MIL in the household and the lack of agency of the DIL.

Involving MILs in the intervention significantly increases health-seeking behaviors. While there were no significant differences between the Group and Individual treatments in signing the flyer, the Group treatment showed a tendency for fewer flyers signed but more hospital visits. When further breaking down the results, daughters-in-law in both the Group and Individual treatments with their mothers-in-law were significantly more likely to visit the district hospital for additional training than daughters-in-law given information in the absence of mothers-in-law or peers. Notably, the Group treatment with both daughters-in-law and mothers-in-law resulted in the highest likelihood of hospital visits, despite being the least likely to sign the flyer immediately after the training, when compared to daughters-in-law given information alone, in the absence of the mother-in-law or peers. These findings highlight the positive impact of involving mothers-in-law in promoting health-seeking behaviors, and are also suggestive of a social norm dynamic.

Finally, we observe significant differences in perinatal complications at endline. DILs in the Individual treatment, both with and without the MIL, experienced significantly fewer complications after delivery and with the infant. Conversely, the Group treatment involving both the DIL and the MIL saw more complications during pregnancy. This group also had the fewest ANC visits at midline, suggesting a relationship between seeking ANC earlier in pregnancy and better health outcomes. This study makes four significant contributions. First, to our knowledge, it constitutes the first field experiment designed to test the impact of the relationship between the daughter-in-law and mother-in-law on women's health decisions. Existing studies have shown that this intergenerational dynamic can play out in two ways: co-residence with the mother-in-law can positively affect better sharing of household work (Khanna and Pandey (2020)), improved iron supplementation during pregnancy (Varghese and Roy (2019)), enhanced mental health during the postpartum period with a better relationship (Chandran et al. (2002); Gausia et al. (2009)), and increased likelihood of using antenatal care (Allendorf (2010)). Conversely, the mother-in-law could limit young women's mobility and access to peer networks, impact their reproductive health-seeking be-

havior (Anukriti et al. (2019, 2022)), or lead to power struggles over finances (Gram et al. (2018)). These studies are based on correlations or quasi-experimental analyses (Anukriti et al. (2019); Banerji et al. (2023); Ghosh and Thornton (2024); Khanna and Pandey (2020)), with no consensus on the direction and impact of the relationship on decision-making. Our findings provide new evidence on this relationship: DILs tend to take-up better health-seeking behaviors when their MILs are involved. This effect is more salient at the Individual treatment level. Second, this study contributes to the extensive literature on intrahousehold decision-making, which has largely focused on spousal bargaining within a nuclear family structure. Even within studies on spousal bargaining, limited attention has been given to understanding health decision-making, with the exception of fertility decisions (Ashraf et al. (2017, 2020)) and contraception adoption (Ashraf et al. (2014)). Intrahousehold decision making across generations holds particular importance in LMICs where multiple generations reside in the same household. This study significantly extends the existing empirical evidence on household decision-making to include intergenerational decision-making, especially regarding health decisions.

Third, we contribute to the growing literature on social norms, signaling, and peer effects in economics. Previous literature has documented the effect of social norms in educational settings (Bursztyn et al. (2019, 2018); Bursztyn and Jensen (2015, 2017)), as well as the rigidity of traditional social norms due to social image concerns (Haenni and Lichand (2021)). Building on the seminal social signaling models by (Benabou and Tirole (2011); Bénabou and Tirole (2006)), recent empirical literature has shown that individuals in limited information settings are concerned with signaling, and their utility often depends on the expectations that others form about their type based on actions they or members of their network take (Bursztyn et al. (2018); Karing (2019)). Chandrasekhar et al. (2018) and Banerjee et al. (2019) also provide evidence on how the social stigma of seeking information can inhibit social learning. We contribute to this literature by experimentally varying whether the knowledge of information delivery is public or private. In line with the literature, we find evidence consistent with the hypothesis that social image concerns inhibit the take-up of ANC visits, and consumption of IFA tablets in the short-run when information provision occurs in a group or public setting.

Lastly, we contribute to the literature on health information campaigns. A lack of information on health risks and benefits is a critical factor behind the underinvestment in preventative healthcare. Few studies have shown the causal link between simple information, reducing risky health behaviors, and remedial health-seeking (Dupas (2011); Jalan and Somanathan (2008); Madajewicz et al. (2007)). However, information impacts different individuals in different ways. Information has the desired impact when targeted to the right person Kremer and Miguel (2007)) or when differences in incentives within the household or levels of decision-making authority are considered (Ashraf et al. (2017); Björkman-Nyqvist et al. (2023); Nyqvist and Jayachandran (2017)). Additionally, the effectiveness of information can vary drastically depending on whether learning from others is possible (Kremer and

Miguel (2007); Leonard et al. (2009)). We contribute to this literature by: (1) providing information about a preventative health behavior like antenatal visits, which can have high-stakes negative consequences; (2) targeting the information to specific household members to understand the impact of the recipient on health behaviors; and (3) providing information in the presence of peers, thereby studying the effect of social learning and norms on health-seeking behavior.

0.2 Context and Setting

0.2.1 Antenatal care in India

ANC is defined as care provided by a skilled health professional focused on the mother and the baby throughout pregnancy. The typical components of antenatal care in India include identifying risk factors, management of pregnancy-related health conditions and health education. The government of India defines complete antenatal care as at least 4 antenatal visits with the first visit being in the first trimester, three tetanus typhoid injections, and a minimum of 100 iron folic acid tablets taken throughout the pregnancy. All antenatal visits in India are provided free of cost. In addition, Village Health and Nutrition Day is organized once every month in every village to provide maternal and child healthcare services within the village.

Obstetric hemorrhage, pregnancy-related infection, and improper monitoring and underestimating the importance of warning signs hypertensive disorders are the main drivers of maternal deaths in India (Gupta et al. (2010); Kassebaum et al. (2016); Meh et al. (2022); Montgomery et al. (2014)). Regular antenatal check-ups allow for the opportunity to diagnose these disorders and provide treatment promptly. In addition, pre-existing conditions like anemia which worsen during pregnancy and exacerbate postpartum bleeding increase the proportion of hemorrhage-related deaths in poorer states and rural areas. The prevalence of iron deficiency anemia in pregnant Indian women is among the highest in the world and untreated anemia can have significantly adverse birth outcomes for mothers and newborns (Tandon et al. (2018)). Indian women, particularly in rural areas, are unable to meet the iron demands of pregnancy through diet alone. As a result, along with communication of nutritional requirements, the World Health Organization (WHO) recommends all pregnant women be given 30-60 mg of elemental iron per day along with 2.8 mg of folic acid. Thus, an important component of antenatal care visits in India is the provision of iron folic acid (IFA) supplements free of cost to all pregnant women.

0.2.2 Setting

In this study, we focus on the central state of Madhya Pradesh which is a large state in central India with approximately 40 percent of its population living in poverty. The state

is administratively divided into 52 districts with 51,527 villages. We chose to conduct the study in three districts in the state: Sagar, Panna, and Chhattarpur. We selected these districts as they have a higher burden of adverse maternal health outcomes, are a priority for our implementing partner, and state government. Table 0.1 shows health indicators for Madhya Pradesh, and the sample districts. A little more than half of the state's pregnant women reported going for four ANC visits with lower proportions for the districts (35.9, 36.9, and 30.9 respectively) in the study sample. We also see that close to a majority of the sample is anemic but consumption of IFA tablets remains low.

0.3 Conceptual Framework

This paper aims to (1) understand how providing counseling-style health information on prenatal best practices to DILs and their MILs can improve health outcomes for mothers and infants and (2) examine how participation in social learning through groups affects the adoption of health behaviors by DILs and MILs. Additionally, we seek to unpack the inter-generational decision-making dynamic between the DILs and the MILs in a setting where the relationship can be restrictive and adherence to norms is high.

The intervention delivers information on two important maternal health practices: the benefits of regular antenatal check-ups, and taking iron folic acid supplements to reduce the risk of anemia during pregnancy. We deliver this information in a counseling-style (see Appendix A1) to encourage conversation and cooperation between the DIL and MIL. Our motivating hypothesis is that DILs and MILs lack information about the benefits of ANC and IFA consumption, and that prior beliefs and norms may limit improvements in these outcomes. Previous pilot work has shown that women are either unaware or underestimate both the benefits of ANC and the risks involved in not receiving appropriate care during pregnancy.

By providing information to individuals alone versus in groups, we aim to understand better how the joint provision of information to informal networks outside the household can influence the DIL's agency and health-seeking behavior. If the MIL has no prior beliefs, we expect to see a strong effect of the group treatment on the take-up of ANC visits by the MIL. Given the DIL's limited access to a social network in the village (Anukriti et al. (2019)), we expect the effect on the DIL to be positive but similar to the effect when only the DIL is informed individually. When the MIL holds strong prior beliefs and receives information (e.g., IFA-related information), we expect one of two outcomes: either a change in norms through social learning or a stronger adherence to norms due to social pressure to maintain the status quo.

Based on this, we have the following independent hypotheses:

- We anticipate a greater treatment effect when the MIL is treated along with the DIL as the literature suggests that the MIL exerts more influence in household decision-making *(Only DIL < DIL and MIL)*
- If neither the DIL nor the MIL have strong priors, we predict they will update their beliefs, resulting in a treatment effect. Otherwise, no effect is expected.
- If the MIL has no strong priors, we expect to see a higher effect of the group (public information) *(Group > Individual; DIL and MIL > Only DIL)*
- If the DIL has no strong priors, we expect group (public information) to have a higher effect *(Group + Only DIL > Individual + Only DIL)*
- If the MIL has strong priors, we expect the DIL to align with the MIL's decision, but we cannot predict ex-ante which way the effect would go *(Only DIL < DIL and MIL; Group >, < or = Individual).*

0.4 Experiment: Design and Implementation

We designed our experiment to explore the most effective way to convey health information to pregnant women in environments with particularly low agency. Central to the design is the observation that providing information to daughters-in-law (DILs) alone might not achieve the desired effect of increasing preventative care during pregnancy if social norms and mothers-in-law (MILs) play a dominant role in household decision-making. Our ultimate goal was to determine the most influential recipient of the information and the optimal mode of delivery.

0.4.1 Treatments

All of our experimental treatment arms involved delivering important health information on the importance of ANC, and leveraging support from household members, particularly the MIL. Specifically, our intervention focused on the following: 1) benefits of ANC and the minimum number of visits recommended; 2) availability of free care and place to find care; 3) the risk of anemia during pregnancy; and 4) common misconceptions about iron tablets. In all treatment arms, DILs were also encouraged to talk to their mothers-in-law about this information and ask her for support during the pregnancy. The treatment arm involving DILs and MILs together encouraged asking questions and discussion between the DIL and her MIL (A.2). Finally, participants in each treatment group were provided a flyer to sign at the end of the intervention, committing to attending an in-hospital training.

The treatments are as follows:

1. Control group: The control group was a pure control group; they did not receive any intervention.

2. Individual + Only DIL ($T_{I:DIL}$): only the DIL received the health information, which was provided at her home. To maintain the privacy of the information delivery from the MIL, the MIL received a placebo training on COVID-19-related safety.

3. Individual + DIL and MIL ($T_{I:DIL+MIL}$): The DIL and MIL received the health information at their home. The information was given to them together, at the same time, and the script encouraged conversation and questions.

4. Group + Only DIL ($T_{G:DIL}$): The DIL was invited to a village group meeting, and received the health information there, in the presence of other DILs from the village. To ensure participation, the MILs were also invited but received the place COVID-19 related training in the presence of other MILs. All group meetings encouraged conversation and questions.

5. Group + DIL and MIL ($T_{G:DIL+MIL}$): The DILs and MILs were invited to a village group meeting, and received the health information there, in the presence of other DILs and MILs from the village. All group meetings encouraged conversation and questions.

0.4.2 Power calculations

We computed the sample size for the impact of the treatment on the number of ANC visits using the NFHS 2015-16 data. We calculated the mean (2.31 visits), standard deviation (3.1), and intraclass correlation coefficient (0.285) for ANC visits using data from our three sample districts. We also assumed a cluster size of 10 pregnant women per village. Ex-ante, our budget allowed us to work in a maximum of 400 villages, so we calculated power based on those estimates. We divided these equally across the pooled and cross-randomized treatment arms. This allocation gave us a maximum of 1000 DILs and 1000 MILs per pooled treatment, resulting in a maximum total sample size of 4000 DILs and 4000 MILs. With this design, we achieved a power of 0.8 to detect a minimum detectable effect (MDE) of 0.73 visits (cluster size 10) or 0.80 visits (cluster size 5) in the pooled treatment groups versus the control group and an MDE of 0.9 visits (cluster size 10) or 0.98 visits (cluster size 5) in the cross-randomized treatment arms versus the control group.

0.4.3 Sample size and randomization

We selected 618 initial villages in our sample districts from the 2011 district-wise census. We chose villages based on the following criteria: 1) 300-700 households per village; 2) a maximum distance of 10 kilometers from a health facility; and 3) the presence of public transport in the village. We conducted an initial scouting survey in these 618 villages to collect a roster of pregnant women from the community health workers and gather village-level characteristics. Our inclusion criteria for the baseline survey required villages to have more than five pregnant women, resulting in a final list of 426 villages. For ease of implementation, we conducted the study in five phases. We randomized the 426 villages into these five phases.

In each phase, we implemented a baseline survey, the intervention, a midline survey, and an endline survey (see 0.1 for details).

We collected baseline survey data from all consenting daughters-in-law and mothers-in-law after applying the study's inclusion criteria: 1) DILs had to be less than seven months pregnant at the time of the survey; and 2) DILs had to reside with their MILs on a permanent basis. We conducted the baseline survey in person, simultaneously surveying both the DIL and MIL. The survey collected data on demographics, pregnancy and fertility history, knowledge of preventative care during pregnancy, and beliefs in social norms. Additionally, the survey included questions to elicit the relationship between the DIL and the MIL.

We randomized the participants into treatments after the baseline survey. Table A.1 shows the phase-wise villages selected for randomization after applying all inclusion criteria. The total sample randomized at baseline consists of 281 villages and 2409 households. We stratified our sample by district, sub-district, number of pregnant women at baseline, total number of households, and distance to the nearest health center. The randomization was conducted in Stata 16, using the *randtreat* command. We randomized at the village level and then at the household level. First, villages were randomized into a control arm, a group treatment, and an individual treatment. We assumed an unequal cluster size, ranging between 6 and 26 households in a village. We also assigned unequal treatment fractions, with the control group having less villages than the Group and Individual treatment. Next, we randomized households within each treatment village into the Only DIL and the DIL and MIL treatments. This randomization assumed equal treatment fractions. Table A.3 tests baseline covariates between the control group and the treatment arms, and then across the treatment arms. Columns 1-10 present the mean and standard deviation by covariate in the control and each treatment, while columns 11-18 present p-values of pairwise comparisons of differences in means. Of the 656 comparisons, 5.64 percent have a p-value below 0.1 and 8.84 percent have a p-value below 0.05.

We delivered the intervention described in the previous section within three weeks after the baseline in all treatment groups. One and a half months after the intervention, we conducted an in-person midline survey for the entire sample. The midline survey was brief and collected only primary outcomes. At the end of the midline survey, all treated participants received a 'reminder' message, which included listening to a short audio clip of a conversation between a community health worker and a doctor about the importance of ANC, warning signs during pregnancy, and institutional birth.

We conducted endline surveys within a month after delivery. Given the range of gestational ages (2 to 6 months), the endline survey followed the timing of births rather than the phases. Since delivery dates varied among households in a village, we implemented the endline survey over the phone. The endline survey collected the same data as the baseline survey and included post-delivery outcomes, volume of conversations, and feedback on the

health information intervention.

0.4.4 Outcomes

We consider three main outcomes of interest at two points in time, the midline and the endline: 1) knowledge of ANC and IFA; 2) number of ANC visits completed; and 3) number of IFA tablets consumed. Additionally, we examine secondary outcomes measured once during the study period: 1) flyer signed after the intervention (measured at the time of intervention); 2) district hospital visits for additional pregnancy-related sessions; and 3) pregnancy, birth, and infant complications (measured at endline).

We construct a standardized weighted ANC and IFA knowledge index following Anderson (2008)). The index components include indicators for correctly identifying 1) the importance of ANC for detecting maternal health complications, 2) the importance of ANC for detecting fetal complications, 3) the importance of ANC for early intervention, 4) the importance of iron in preventing anemia; and 5) that beliefs about IFA side-effects are incorrect.

We then consider the number of ANC visits completed and the number of IFA tablets consumed as self-reported continuous outcomes, winsorized at the 95th percentile to control for outliers. These outcomes enable us to measure actual changes in preventative health behaviors.

By offering participants the option to sign a flyer, we provide them with a choice to commit to health-seeking, thus allowing us to measure their immediate response to the intervention. Similarly, self-reported visits to the district hospital help us measure further health-seeking behavior. Finally, we use self-reported pregnancy complications (pre-eclampsia, anemia, gestational diabetes, placenta previa, bleeding, thyroid-related disease, and infection), birth complications (pre-eclampsia, eclampsia, bleeding, infection, fetal distress, meconium aspiration, stillbirth, and preterm labor), post-delivery complications (unable to breastfeed, excessive bleeding, and infections), and an indicator if the infant was sick after delivery. These allow us to measure the impact on health in the perinatal period.

0.5 Estimation strategy

We begin by examining which delivery mechanism (group vs. individual) led to changes in our primary outcomes. To estimate this effect, we present intent-to-treat (ITT) estimates, and our main estimation equation for the pooled treatment is:

$$Y_{iv} = \alpha + \beta_1 T_{G_{iv}} + \beta_2 T_{I_{iv}} + \gamma X_v + \lambda X_i + \theta_s + \epsilon_{iv}$$

where Y_{iv} represents the ANC and IFA knowledge index, number of ANC visits, or number of IFA tablets consumed for respondent i in village v. $T_{G_{iv}}$ and $T_{I_{iv}}$ are treatment indicators for Group and Individual treatments, with the control group as the reference group.

Similarly, we consider which information recipient (only DIL vs. DIL and MIL) matters more for our outcomes. We present a similar equation to 0.5:

$$Y_{iv} = \alpha + \beta_1 T_{I:DIL_{iv}} + \beta_2 T_{I:DIL+MIL_{iv}} + \beta_3 T_{G:DIL_{iv}} + \beta_4 T_{G:DIL+MIL_{iv}} + \gamma X_v + \lambda X_i + \theta_s + \epsilon_{iv}$$

where $T_{I:DIL_{iv}}$ is a treatment indicator for belonging to the cross-randomized arm T1: Individual + Only DIL, $T_{I:DIL+MIL_{iv}}$ is an indicator for T2: Individual + DIL and MIL, $T_{G:DIL_{iv}}$ is an indicator for T3: Group + Only DIL, and $T_{G:DIL+MIL_{iv}}$ is an indicator for T4: Group + DIL and MIL.

To increase the precision of our estimates, we control for village-level covariates (X_v) and individual-level covariates (X_i) selected using post-double selection LASSO (see Chernozhukov et al. (2018)). θ_s denotes the strata fixed effects.

For all specifications, we estimate models using ordinary least squares (OLS), and standard errors are clustered at the village level. We also report p-values of F-tests to check if the coefficients in both 0.5 and 0.5 are different for our comparisons of interest. We correct for multiple hypothesis testing and present sharpened False Discovery Rate (FDR) adjusted q-values (Anderson (2008)).

0.6 Ethics review

This study received approval from the ACE Ethics Committee
(DCGI Reg. No. ECR/141/Indt/KA/2013/RR-19) based in Bangalore, India, and the Institutional Review Board (IRBs) at the University of California, Berkeley (2020-03-13149). All participants consented in their local language. The trial is registered on the AEA RCT Registry. There were no significant changes between the pre-analysis plan and the results presented here, except the inclusion of the following secondary outcomes: 1) flyer signed, and 2) district hospital visited.

0.7 Results

0.7.1 Sample description, balance, and attrition

Table A.4 and A.6 present differences in baseline characteristics of the midline and endline samples for the DIL. On average, DILs in both samples are approximately 23 years old, have slightly over 8 years of schooling, belong to non-general social categories, and less than 20

percent work outside the home. Nearly half of the DILs have been pregnant, and approximately 40 percent have had a previous live birth. At baseline, DILs are between 4 and 5 months pregnant and have completed around one ANC visit before any intervention. ANC and IFA knowledge are high, with approximately 70 percent answering knowledge questions correctly. DILs in our sample live in a very norm-based environment characterized by a restrictive relationship with their MILs. Over 80 percent of DILs need permission from their MILs to visit their maternal home, make purchases, visit friends, or meet with the community health worker. About half the DILs report their MILs limit contact with female friends, get upset with disagreements, and do not like discussing issues related to the DIL's health. Around 90 percent of DILs agree that adherence to norms is important, and only 10 percent believe women should be able to travel independently to health centers.

In addition to descriptive data, Tables A.5 and A.7 also present tests for baseline covariates for the midline (endline) samples. Similar to Table 2a, of 656 pairwise comparisons, 5.64 (41.11) percent have a p-value below 0.1, and 7.77(5.64) percent have a p-value below 0.05.

The overall attrition rate for DILs between baseline and midline was 17.4 percent and the attrition rate between baseline and endline was 23.5 percent. We expected a higher attrition at endline ex-ante as it is harder to track DILs and MILs over the phone, compared to the midline conducted in person. Table A.8 shows the differential attrition for DILs and MILs at midline. The attrition rate was significantly lower for DILs in all treatments, except for TI:DIL+MIL. The attrition rate for MILs was only lower in $T_{I:DIL}$, and $T_{G:DIL+MIL}$. DILs whose household heads were either their MIL or father-in-law, were Hindu or had an older husband were more likely to attrit at midline. Upper caste category and correct knowledge of ANC visits were less likely to attrit. All other covariates do not appear to explain attrition across treatments. Table A.9 shows the attrition rates at endline, where we did not observe significant differential attrition. To account for differential attrition, we include a set of results with inverse probability weights (IPW) for robustness. However, we report results only from model (2), which includes strata fixed effects and lasso-selected controls. For the main results, we excluded 7 villages from the midline and endline samples as they did not receive any treatment due to implementation issues. We also excluded 14 control villages from the endline data that accidentally received the reminder message at midline due to surveyor oversight. Tables A.5 and A.7 present samples that account for these changes. We now report the main empirical results of our specifications. In the following section, we describe the results from the model (2) of the tables, which includes fixed effects and baseline covariates. The results are divided into three categories: 1) knowledge of ANC and IFA, 2) number of ANC visits and IFA tablet consumption, and 3) perinatal health outcomes.

0.7.2 ANC and IFA knowledge at midline and endline

Table 0.2 presents the results on knowledge as measured by the ANC & IFA knowledge index described in section 0.4.4. We show knowledge changes for both the DIL and the MIL at midline and then at endline.

Panel A shows the estimates for specification 0.5, the pooled treatment arms. We see the health information intervention is immediately effective for the DILs and the MILs at midline, with gains in the ANC & IFA knowledge index of 0.28 sd ($p = 0.001$) for DILs and 0.23 sd ($p = 0.037$) for MILs in the Group treatment when compared to control. The individual treatment shows similar effects, with an increase of 0.20 sd ($p = 0.014$) for DILs and 0.21 sd ($p = 0.052$) for MILs when compared to control. These effects remain significant for DILs accounting for the false discovery rate (FDR). Improvements are fairly similar between the two treatments and we do not observe significant differences between them ($p = 0.157$). Looking at the same specification,when comparing point estimates between midline and endline, we see that the effects get stronger compared to control for DILs and MILs in the Individual treatment. However, in the Group treatment, the effect remains unchanged for MILs, and decreases compared to control for DILs, suggesting some frictions in aggregation of knowledge after the intervention and reminder.

Panel B presents the estimates for specification 0.5, the cross-randomized treatment arms compared to the control group. We observe similar significant effect sizes as the pooled arms for each of the treatments, with the exception of the MILs knowledge in $T_{I:DIL+MIL}$ arm. At endline, the effects are stronger for DILs in $T_{I:DIL}$ and $T_{I:DIL+MIL}$ (0.38 sd ($p = 0.000$) and 0.31 sd ($p = 0.005$) respectively) compared to control. However, at endline we see a reduction in effects compared to control for DILs in $T_{G:DIL}$, and $T_{G:DIL+MIL}$. MILs in $T_{I:DIL+MIL}$ catch up at endline compared to control (0.35 sd ($p = 0.001$)). These effects remain significant for DILs accounting for the FDR. It is worth noting, the effect of $T_{G:DIL+MIL}$ is significant (compared to control) with the inclusion of inverse probability weighting. An interesting finding of these results is that we see increases in knowledge for MILs even in treatment arms where they were not treated.

When comparing treatment arms, we find that DILs learn more when grouped with other DILs than on their own ($T_{G:DIL} > T_{I:DIL}$; p=0.085), at midline and endline, an effect that remains significant account for the FDR. MILs at endline, show an increase in knowledge even when not included in treatment, indicating a transfer in knowledge from DILs ($T_{G:DIL} < T_{I:DIL}$; p=0.045). Finally, DILs treated with their MILs have significantly more knowledge when treated individually compared to groups ($T_{G:DIL+MIL} < T_{I:DIL+MIL}$).

0.7.3 Number of ANC visits and IFA tablet consumption

Table 0.3 presents the results for ANC visits and IFA tablets consumption at midline and endline, as reported by DILs.

Panel A displays the pooled results. At midline, DILs in the Individual treatment have 0.22 more ANC visits compared to control (p=0.007), indicating quick take-up. In contrast, Group treatment DILs show no significant gains. Notably, Individual treatment DILs have significantly more than Group treatment DILs (p=0.027). These effects remain significant accounting for the FDR. However, at endline, Individual treatments DILs no longer have significant gains, whereas Group treatment DILs catch up, with 0.18 more visits (p=0.079). This suggests that Individual treatment improved short-term gains, which Group treatment improved long-term gains. However, this effect is not significant at traditional levels of significance for the FDR.

Panel A also presents the pooled results for IFA tablet consumption. Despite a smaller midline sample size due to surveyor error, we observe significant results. Individual treatment DILs show no effects on IFA consumption, whereas Group treatment DILs exhibit modest but significant gains (11.38 more tablets, p=0.064). This aligns with our hypothesis that IFA consumption is associated with strong priors, and peer effects drive the differences between treatment arms (p=0.027). These effects remain significant accounting for the FDR. At endline, Individual treatment DILs remain unchanged, while Group treatment DILs maintain their gains (9.21 more tablets, p=0.048). However, this effect is not significant at traditional levels of significance for the FDR.

Panel B presents the estimates for 0.5, comparing the cross-randomized treatment arms to the control group. We observe significant effects for $T_{I:DIL}$ and $T_{I:DIL+MIL}$ at midline, with $T_{I:DIL+MIL}$ having significantly more visits than TI:DIL ($p = 0.003$). These effects remain significant accounting for the FDR. However, at endline $T_{I:DIL}$ and $T_{I:DIL+MIL}$ no longer show significant gains. Interestingly, $T_{G:DIL+MIL}$ now has 0.21 more visits than control, and is significant, suggesting information seeking and aggregation over time. For IFA consumption, we observe increases of 10-11.5 tablets for $T_{G:DIL}$ and $T_{G:DIL+MIL}$, although only $T_{G:DIL}$ is significant. Finally, at endline we see significant gains for both$T_{G:DIL}$ and $T_{G:DIL+MIL}$ with effect sizes ranging from 8.4-9.9 more tablets, and $T_{G:DIL+MIL} > T_{G:DIL}$ ($p = 0.068$). However, this effect is not significant at traditional levels of significance for the FDR.

0.7.4 Flyer signed and district hospital visited

Table 0.4 presents results for two health-seeking outcomes: 1) flyer signed (measured at midline) and 2) district hospital visit (measured at endline). Panel A shows the results for the pooled treatment arms, with the Individual treatment as the reference group, as the Control arm was not offered the flyer or the district hospital training. We see no significant effects between the two groups, but note that the signs are opposite. The Group treatment

is less likely to sign the flyer compared to the Individual treatment but more likely to visit the district hospital, though these differences are not significant.

In Panel B, DILs in $T_{G:DIL+MIL}$ and $T_{I:DIL+MIL}$ are significantly more likely to visit the district hospital for additional training compared to DILs in $T_{I:DIL}$ (p=-0.030 and 0.049). However, DILs in $T_{G:DIL+MIL}$ s are significantly more likely to visit the hospital compared DILs in $T_{I:DIL+MIL}$. Interestingly, $T_{G:DIL+MIL}$ is the only treatment less likely to sign the flyer right after the training. One clear takeaway from these results is that involving the MIL in the intervention leads to an increase in health-seeking behaviors, such as actual visits to the hospital.

0.7.5 Maternal and infant complications

Table 0.5 displays the results for perinatal complications at endline, reported by the DIL. In Panel A, we see that Individual DILs experiences significantly lesser post-delivery and infant-related complications than the control (p=0.029 and 0.024) and Group DILs (p=0.000). We also see that Group DILs experienced a higher proportion of pregnancy-related complications compared to control (p=0.061) and the Individual DILs (p=0.011).

In Panel B, we see that post-delivery and infant-related complications are significantly lower for $T_{I:DIL}$ and $T_{I:DIL+MIL}$ and $T_{I:DIL} < T_{I:DIL+MIL}$. We also observe that DILs in TG:DIL+MIL experienced more pregnancy complications compared to control. These results closely follow the patterns of the result for ANC visits, and are indicative of a positive relationship between preventative pregnancy care and postnatal complications for mothers and infants.

0.8 Discussion

In this paper, we analyze the effect of providing important maternal health information to DILs and MILs in a public or private setting on preventative health seeking behavior, in particular on the number of antenatal care visits, and consumption of IFA tablets. In contrast to previous literature on the effect of information on health-seeking behavior, our study sheds light on a novel dynamic within the household, the role of inter-generational decision-making on maternal health decisions. Our results show a large increase in ANC and IFA for all treatments and a significant increase in the number of antenatal care visits, and IFA tablets consumed, in the short and long run. We also see a positive effect on perinatal health outcomes like post-delivery complications and infant health. The results are consistent with the hypotheses that: 1) mothers-in-law have considerable say in the health decisions of young married women in India; 2) norms and concerns about social image prevent mothers-in-law from allowing their daughters-in-law to seek more care during pregnancy, at least in the short run. The study provides strong motivation to further explore the role of the mother-in-law

in health decision-making. It opens up avenues for future research to understand how adherence to norms can be reversed to improve health outcomes (as well as possible spillovers).

The main contribution of our study is to shed light on a critical inter-generational dynamic across rural India when young married women co-reside with their mothers-in-law. Many health information campaigns focus on providing information to young married women, pregnant women, or new mothers. It is equally beneficial to target health information to other household members, particularly the mother-in-law. In order to improve outcomes for such women, it is vital to understand the inter-generational bargaining dynamic in the household and use it to either provide information to key decision-makers or empower the young women to engage in bargaining. The findings of our study show that not only is it essential to take this household dynamic into account but how information is provided can also have significantly different results in the presence of social norms and conformity to them.

Table 0.1: State and district-wise maternal health indicators

	State: Madhya Pradesh	District 1: Sagar	District 2: Chhatarpur	District 3: Panna
Completed at least four antenatal care visits (%)	57.5	35.9	36.9	30.9
Pregnant women who are anemic (%)	52.9	55.0	68.3	63.4
Consumed iron and folic acid tablets for > 100 days during pregnancy (%)	51.4	34.4	27.1	29.9
Talked to a health worker in the past year (%)	28.2	23.0	17.8	21.7

Notes: Data presented here is from the most recent version of the National Family Health Survey (NFHS) 2015-16 which is a nationally representative sample survey from the Government of India.

Table 0.2: Daughter-in-law (DIL) and mother-in-law (MIL) ANC and IFA knowledge at midline and endline

	Midline						Endline					
	ANC & IFA knowledge index						ANC & IFA knowledge index					
	DIL reported			MIL reported			DIL reported			MIL reported		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Panel A. Pooled treatments												
Group	0.266***	0.281***	0.262***	0.270**	0.232**	0.271**	0.144	0.147	0.210**	0.236**	0.242***	0.244***
	(0.087)	(0.082)	(0.081)	(0.123)	(0.110)	(0.114)	(0.099)	(0.099)	(0.092)	(0.102)	(0.090)	(0.092)
p -value	0.002	0.001	0.001	0.030	0.037	0.019	0.148	0.141	0.024	0.022	0.008	0.008
q -value	[0.018]	[0.018]	[0.018]	[0.115]	[0.115]	[0.115]	[0.287]	[0.287]	[0.287]	[0.051]	[0.051]	[0.051]
Individual	0.177**	0.197**	0.184**	0.227*	0.210*	0.257**	0.347***	0.346***	0.454***	0.338***	0.371***	0.379***
	(0.082)	(0.079)	(0.076)	(0.119)	(0.107)	(0.110)	(0.105)	(0.105)	(0.097)	(0.109)	(0.099)	(0.099)
p -value	0.033	0.014	0.017	0.058	0.052	0.021	0.001	0.001	0.000	0.002	0.000	0.000
q -value	[0.050]	[0.050]	[0.050]	[0.150]	[0.150]	[0.150]	[0.017]	[0.017]	[0.017]	[0.001]	[0.001]	[0.001]
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1,246	1,244	1,150	1,309	1,309	1,197	1,844	1,844	1,702	1,977	1,835	1,835
p (Group=Individual)	0.124	0.157	0.185	0.658	0.808	0.870	0.005	0.005	0.000	0.227	0.099	0.090
q -value	[0.187]	[0.187]	[0.187]	[1.000]	[1.000]	[1.000]	[0.032]	[0.032]	[0.032]	[0.234]	[0.234]	[0.234]

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Panel B. All treatments

T1: Individual + Only DIL	0.145*	0.172**	0.157*	0.254**	0.254**	0.309***	0.377***	0.378***	0.487***	0.380***	0.399***	0.407***
	(0.086)	(0.084)	(0.082)	(0.120)	(0.113)	(0.118)	(0.105)	(0.105)	(0.098)	(0.110)	(0.100)	(0.099)
p-value	0.095	0.041	0.058	0.036	0.025	0.009	0.000	0.000	0.000	0.001	0.000	0.000
q-value	[0.093]	[0.093]	[0.093]	[0.093]	[0.093]	[0.093]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
T2: Individual + DIL&MIL	0.215**	0.239***	0.208***	0.195	0.190	0.214	0.316***	0.313***	0.423***	0.295***	0.346***	0.359***
	(0.087)	(0.083)	(0.078)	(0.147)	(0.132)	(0.137)	(0.110)	(0.110)	(0.101)	(0.111)	(0.104)	(0.105)
p-value	0.014	0.005	0.009	0.185	0.153	0.120	0.004	0.005	0.000	0.009	0.001	0.001
q-value	[0.032]	[0.032]	[0.032]	[0.350]	[0.350]	[0.350]	[0.032]	[0.032]	[0.032]	[0.011]	[0.011]	[0.011]
T3: Group + Only DIL	0.274***	0.288***	0.255***	0.277**	0.255**	0.300**	0.122	0.128	0.170*	0.228**	0.235**	0.241**
	(0.087)	(0.086)	(0.084)	(0.129)	(0.113)	(0.116)	(0.105)	(0.105)	(0.099)	(0.104)	(0.091)	(0.094)
p-value	0.002	0.001	0.003	0.032	0.025	0.010	0.247	0.226	0.088	0.029	0.010	0.011
q-value	[0.022]	[0.022]	[0.022]	[0.093]	[0.093]	[0.093]	[0.301]	[0.301]	[0.301]	[0.053]	[0.053]	[0.053]
T4: Group + DIL&MIL	0.258***	0.280***	0.257***	0.264*	0.227*	0.250*	0.164	0.163	0.246***	0.243**	0.259***	0.259***
	(0.095)	(0.092)	(0.089)	(0.137)	(0.130)	(0.135)	(0.101)	(0.101)	(0.094)	(0.105)	(0.094)	(0.095)
p-value	0.007	0.003	0.004	0.057	0.081	0.066	0.107	0.108	0.009	0.022	0.006	0.007
q-value	[0.022]	[0.022]	[0.022]	[0.208]	[0.208]	[0.208]	[0.286]	[0.286]	[0.286]	[0.048]	[0.048]	[0.048]
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1,246	1,244	1,150	1,309	1,309	1,197	1,844	1,844	1,702	1,977	1,835	1,835

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p (T1=T2)	0.784	0.894	0.973	0.887	0.783	0.619	0.455	0.520	0.171	0.732	0.532	0.682
q -value	[0.454]	[0.454]	[0.454]	[1.000]	[1.000]	[1.000]	[0.442]	[0.442]	[0.442]	[1.000]	[1.000]	[1.000]
p (T3=T4)	0.181	0.199	0.361	0.625	0.576	0.45	0.189	0.159	0.169	0.041	0.228	0.290
q -value	[0.187]	[0.187]	[0.187]	[1.000]	[1.000]	[1.000]	[0.287]	[0.287]	[0.287]	[0.520]	[0.520]	[0.520]
p (T1=T3)	0.044	0.090	0.148	0.819	0.999	0.926	0.002	0.002	0.000	0.087	0.045	0.049
q -value	[0.088]	[0.088]	[0.088]	[1.000]	[1.000]	[1.000]	[0.018]	[0.018]	[0.018]	[1.000]	[1.000]	[1.000]
p (T2=T4)	0.555	0.574	0.495	0.644	0.785	0.800	0.059	0.061	0.019	0.563	0.308	0.255
q -value	[0.440]	[0.440]	[0.440]	[1.000]	[1.000]	[1.000]	[0.232]	[0.232]	[0.232]	[0.697]	[0.697]	[0.697]
Strata fixed efffects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline covariates	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Inverse probability weights (IPW)	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Notes: This table presents the results of the treatments on ANC and IFA knowledge, as reported by the daughter-in-law (DIL) and the mother-in-law (MIL) at midline and endline. Each column represents a separate regression. The outcome variable of interest is an ANC & IFA knowledge index. The index components are indicators for: 1) correctly identifying the importance of ANC for detecting maternal health complications; 2) correctly identifying the importance of ANC for detecting fetal complications; 3) correctly identifying the importance of ANC for early intervention; 4) correctly identifying the importance of iron in preventing anemia; 5) correctly identifying that beliefs about IFA side effects are incorrect. These variables were combined into an index using Anderson (2008) and standardized around the mean of the control group. Panel A shows the effect of the pooled treatments on the ANC & IFA knowledge index, where the treatment variable is 1 if the DIL or MIL belong to the group or individual treatment and 0 if they belong to the control group. Panel B presents results for the same outcome for all four treatments, where the treatment variable is 1 if the DIL or MIL belong to T1-T4 and 0 if they belong to the control group. We present three models for both participants: (1), (2), and (3). All models include strata fixed effects, and robust standard errors clustered at the village level are shown in parentheses. Model (2) also includes baseline covariates selected using post-double selection (Chernozhukov et al. (2018)), and model (3) includes inverse probability weights to account for differential attrition. Data was not collected for Phase 1 and 2 of the midline due to surveye error. We excluded 7 villages from the midline and endline samples as they did not receive the treatments, and 14 control villages from the endline sample only as they were given the treatment. We present sharpened False Discovery Rate (FDR) adjusted q-values (DIL and MIL outcomes, and midline and endline outcomes were grouped separately) to correct for multiple hypothesis testing (Anderson (2008)). *** p <0.01, ** p <0.05, * p <0.1

Table 0.3: Number of ANC visits and IFA tablet consumption at midline and endline

	Daughter-in-law (DIL) reported at midline						Daughter-in-law (DIL) reported at endline					
	Number of ANC visits			IFA tablet consumption			Number of ANC visits			IFA tablet consumption		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Panel A. Pooled treatments												
Group	0.010	0.026	0.011	10.799*	11.380*	10.014	0.180*	0.179*	0.203*	9.205**	9.214**	8.582*
	(0.092)	(0.089)	(0.090)	(6.118)	(6.090)	(6.161)	(0.102)	(0.102)	(0.110)	(4.635)	(4.629)	(4.822)
p -value	0.917	0.772	0.906	0.080	0.064	0.107	0.081	0.079	0.066	0.048	0.048	0.077
q -value	[0.454]	[0.454]	[0.454]	[0.094]	[0.094]	[0.094]	[0.244]	[0.244]	[0.244]	[0.232]	[0.232]	[0.232]
Individual	0.201**	0.220***	0.203**	-0.706	-0.722	-0.831	0.141	0.142	0.183	7.657	7.485	6.421
	(0.084)	(0.081)	(0.085)	(5.417)	(5.474)	(5.430)	(0.124)	(0.124)	(0.135)	(5.565)	(5.608)	(5.402)
p -value	0.017	0.007	0.018	0.897	0.895	0.879	0.258	0.254	0.178	0.170	0.184	0.236
q -value	[0.028]	[0.028]	[0.028]	[0.454]	[0.454]	[0.454]	[0.302]	[0.302]	[0.302]	[0.470]	[0.470]	[0.470]
Control mean	2.969	2.969	2.969	56.63	56.63	56.63	3.300	3.300	3.300	70.79	70.79	70.79
Observations	1,991	1,991	1,831	731	731	676	1,835	1,835	1,695	1,835	1,835	1,695
p (Group=Individual)	0.032	0.027	0.039	0.052	0.027	0.052	0.668	0.680	0.841	0.703	0.676	0.627
q -value	[0.028]	[0.028]	[0.028]	[0.066]	[0.066]	[0.066]	[0.470]	[0.470]	[0.470]	[0.470]	[0.470]	[0.470]

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Panel B. All treatments

T1: Individual + Only DIL	0.173*	0.196**	0.182*	0.705	0.452	0.603	0.091	0.094	0.092	9.966	9.845	9.637
	(0.092)	(0.090)	(0.093)	(5.977)	(5.916)	(5.846)	(0.121)	(0.120)	(0.130)	(6.145)	(6.170)	(6.034)
p-value	0.060	0.031	0.053	0.906	0.939	0.918	0.450	0.432	0.477	0.106	0.112	0.112
q-value	[0.067]	[0.067]	[0.067]	[0.402]	[0.402]	[0.402]	[0.442]	[0.442]	[0.442]	[0.286]	[0.286]	[0.286]
T2: Individual + DIL&MIL	0.233***	0.247***	0.226**	-2.279	-3.377	-4.156	0.196	0.195	0.278*	5.289	5.054	3.240
	(0.088)	(0.084)	(0.089)	(5.110)	(5.278)	(5.264)	(0.140)	(0.140)	(0.153)	(5.245)	(5.302)	(5.091)
p-value	0.009	0.004	0.012	0.656	0.524	0.432	0.163	0.167	0.070	0.314	0.342	0.525
q-value	[0.022]	[0.022]	[0.022]	[0.187]	[0.187]	[0.187]	[0.287]	[0.287]	[0.287]	[0.395]	[0.395]	[0.395]
T3: Group + Only DIL	0.100	0.117	0.074	11.363*	11.394*	9.825	0.151	0.152	0.171	8.457*	8.468*	8.480
	(0.094)	(0.093)	(0.094)	(6.065)	(5.915)	(5.928)	(0.106)	(0.105)	(0.112)	(4.882)	(4.872)	(5.283)
p-value	0.289	0.208	0.435	0.064	0.057	0.100	0.157	0.151	0.129	0.085	0.084	0.110
q-value	[0.192]	[0.192]	[0.192]	[0.178]	[0.178]	[0.178]	[0.287]	[0.287]	[0.287]	[0.244]	[0.244]	[0.244]
T4: Group + DIL&MIL	-0.079	-0.065	-0.051	10.279	10.312	8.942	0.210*	0.208*	0.239**	9.888**	9.896**	8.546*
	(0.098)	(0.094)	(0.095)	(7.165)	(7.016)	(7.169)	(0.110)	(0.109)	(0.117)	(4.703)	(4.702)	(4.816)
p-value	0.420	0.493	0.590	0.154	0.144	0.215	0.057	0.058	0.042	0.037	0.037	0.078
q-value	[0.415]	[0.415]	[0.415]	[0.093]	[0.093]	[0.093]	[0.232]	[0.232]	[0.232]	[0.209]	[0.209]	[0.209]
Control mean	2.969	2.969	2.969	56.63	56.63	56.63	3.300	3.300	3.300	70.79	70.79	70.79
Observations	1,991	1,991	1,831	731	731	676	1,835	1,835	1,695	1,835	1,835	1,695

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p (T1=T2)	0.003	0.003	0.035	0.830	0.827	0.863	0.375	0.403	0.301	0.558	0.559	0.983
q -value	[0.022]	[0.022]	[0.022]	[0.402]	[0.402]	[0.402]	[0.442]	[0.442]	[0.442]	[0.422]	[0.422]	[0.422]
p (T3=T4)	0.371	0.438	0.503	0.273	0.161	0.0958	0.18	0.199	0.031	0.077	0.068	0.027
q -value	[0.402]	[0.402]	[0.402]	[0.192]	[0.192]	[0.192]	[0.297]	[0.297]	[0.297]	[0.236]	[0.236]	[0.236]
p (T1=T3)	0.461	0.436	0.304	0.096	0.066	0.134	0.551	0.563	0.455	0.756	0.778	0.832
q -value	[0.402]	[0.402]	[0.402]	[0.440]	[0.440]	[0.440]	[0.442]	[0.442]	[0.442]	[0.489]	[0.489]	[0.489]
p (T2=T4)	0.002	0.001	0.005	0.067	0.0323	0.0447	0.893	0.899	0.73	0.245	0.233	0.212
q -value	[0.018]	[0.018]	[0.018]	[0.454]	[0.454]	[0.454]	[0.538]	[0.538]	[0.538]	[0.301]	[0.301]	[0.301]
Strata fixed efffects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline covariates	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Inverse probability weights (IPW)	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Notes: This table presents the results of the treatments on the number of ANC visits, and IFA tablet consumption as reported by the daughter-in-law (DIL) at midline and endline. Each column represents a separate regression. The outcome variable of interest are number of ANC completed at the time of the survey and the number of iron and folic acid tablets consumed. The number of ANC visits are self-reported at midline and endline. The number of IFA tablets consumed at midline were only asked to participants who had registered their pregnancy, and had a Mother and Child Protection (MCP) card. Both outcomes were winsorized to the 95th percentile for outliers. Panel A shows the effect of the pooled treatments on the outcomes, where the treatment variable is 1 if the DIL or MIL belong to the group or individual treatment and 0 if they belong to the control group. Panel B presents results for the same outcome for all four treatments, where the treatment variable is 1 if the DIL or MIL belong to T1-T4 and 0 if they belong to the control group. We present three models for both participants: (1), (2), and (3). All models include strata fixed effects, and robust standard errors clustered at the village level are shown in parentheses. Model (2) also includes baseline covariates selected using post-double selection (Chernozhukov et al. (2018)), and model (3) includes inverse probability weights to account for differential attrition. We present sharpened False Discovery Rate (FDR) adjusted q-values (DIL and MIL outcomes, and midline and endline outcomes were grouped separately) to correct for multiple hypothesis testing (Anderson (2008)). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 0.4: Flyer signed and district hospital visited

	Daughter-in-law reported			
	Flyer signed		District hospital visited	
	(1)	(2)	(1)	(2)
Panel A. Pooled treatments				
Group	-0.023	-0.025	0.050	0.039
	(0.015)	(0.017)	(0.038)	(0.041)
	0.116	0.156	0.188	0.342
Mean of reference group (Individual)	0.972	0.972	0.610	0.610
Observations	1,400	1,287	1,400	1,287
Panel B. All treatments				
T2: Individual + DIL&MIL	-0.002	-0.002	0.054**	0.068**
	(0.010)	(0.010)	(0.027)	(0.027)
	0.848	0.865	0.049	0.013
T3: Group + Only DIL	-0.022	-0.021	0.056	0.052
	(0.015)	(0.014)	(0.043)	(0.043)
	0.155	0.141	0.198	0.230
T4: Group + DIL&MIL	-0.026*	-0.026*	0.097**	0.097**
	(0.015)	(0.014)	(0.044)	(0.045)
	0.080	0.066	0.030	0.031
Mean of reference group (T1: Individual + Only DIL)	0.971	0.971	0.579	0.579
Observations	1,400	1,287	1,400	1,287
p(T3=T4)	0.763	0.689	0.288	0.464
p(T2=T4)	0.172	0.152	0.081	0.058
Strata fixed efffects	Yes	Yes	Yes	Yes
Baseline covariates	No	Yes	No	Yes

Notes: This table presents the results of the treatments on flyer signed and district hospital visited as reported by the DIL at endline. We do not include the control group in this analysis, as control did not get the flyer. Each column represents a separate regression. The outcome variable of interest are indicators which are 1 if the daughter-in-law reported signing the flyer or visiting the district hospital and, and 0 if they did not. Panel A shows the effect of the pooled treatments on the outcomes, where the treatment variable is 1 if the DIL belongs to the group treatment and 0 if they belong to the individual treatment. Panel B presents results for the same outcome for cross-randomized treatments, where the treatment variable is 1 if the DIL or MIL belong to T2-T4 and 0 if they belong to T1. We present two models for participants: (1), and (2). All models include strata fixed effects, and robust standard errors clustered at the village level are shown in parentheses. Model (2) also includes baseline covariates selected using post-double selection (Chernozhukov et al. (2018)). We excluded 7 villages from the sample as they did not receive the treatments, and 14 control villages as they were given the treatment. *** p <0.01, ** p <0.05, * p <0.1

Table 0.5: Maternal and infant complications

	Daughter-in-law reported (endline)											
	Complications during pregnancy			Complications during birth			Post-delivery complications			Infant-related complications		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Panel A. Pooled treatments												
Group	0.032*	0.031*	0.026	-0.009	-0.009	-0.008	0.005	0.005	-0.002	-0.020	-0.016	-0.008
	(0.017)	(0.017)	(0.018)	(0.028)	(0.028)	(0.028)	(0.026)	(0.026)	(0.027)	(0.022)	(0.021)	(0.021)
	0.057	0.061	0.148	0.737	0.752	0.782	0.850	0.850	0.955	0.363	0.438	0.710
Individual	-0.006	-0.007	-0.006	-0.018	-0.016	-0.007	-0.067**	-0.067**	-0.071**	-0.057**	-0.055**	-0.040*
	(0.016)	(0.016)	(0.017)	(0.029)	(0.028)	(0.028)	(0.029)	(0.029)	(0.030)	(0.024)	(0.024)	(0.022)
	0.706	0.676	0.726	0.539	0.569	0.811	0.024	0.024	0.017	0.020	0.021	0.078
Control mean	0.056	0.056	0.056	0.131	0.131	0.131	0.108	0.108	0.108	0.081	0.081	0.081
Observations	1,844	1,844	1,702	1,844	1,844	1,702	1,799	1,799	1,658	1,799	1,796	1,658
p (Group=Individual)	0.012	0.011	0.039	0.721	0.749	0.963	0.000	0.000	0.001	0.012	0.010	0.034

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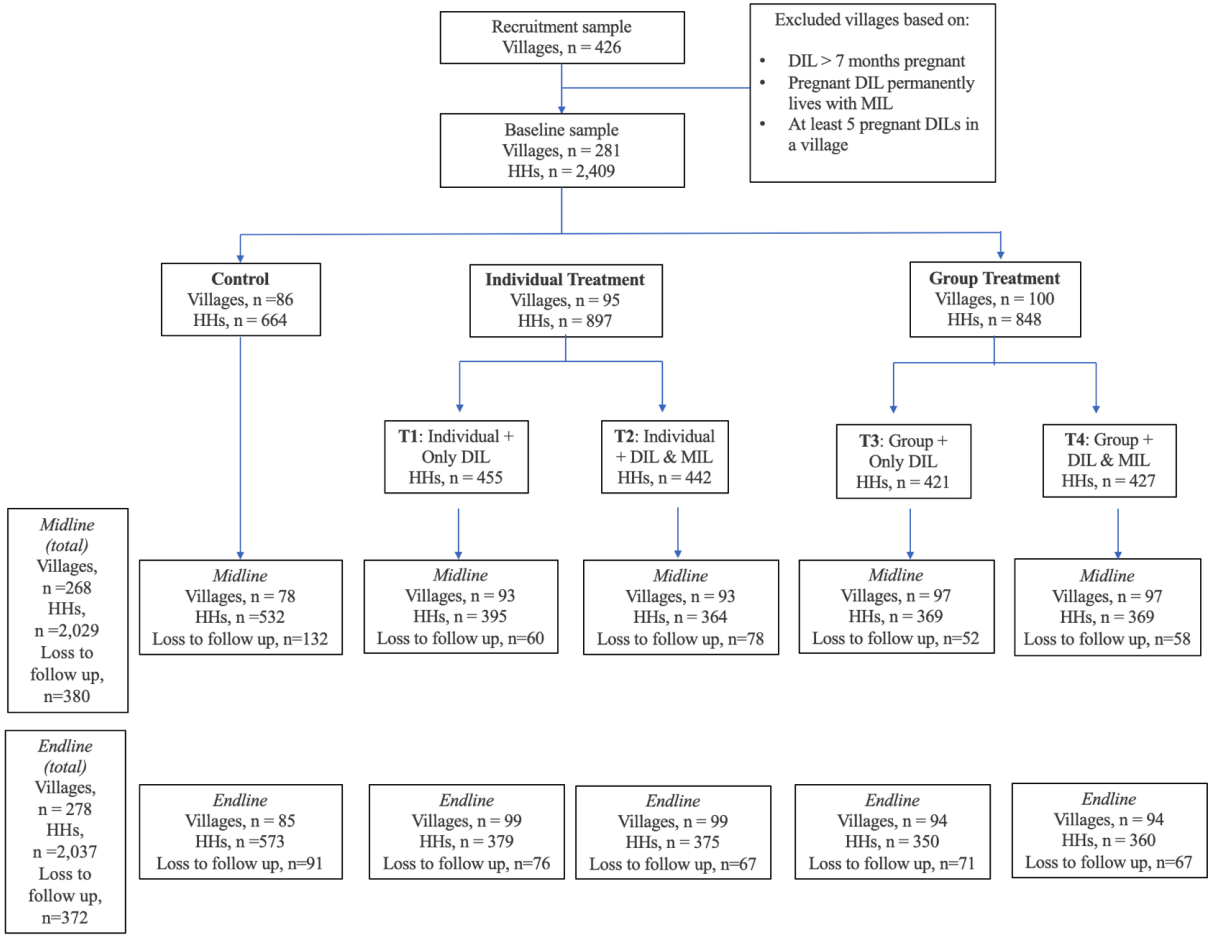
Panel B. All treatments

T1: Individual + Only DIL	-0.016	-0.017	-0.019	-0.027	-0.026	-0.021	-0.073**	-0.073**	-0.079***	-0.053**	-0.051**	-0.033
	(0.018)	(0.018)	(0.018)	(0.031)	(0.031)	(0.030)	(0.030)	(0.030)	(0.030)	(0.026)	(0.025)	(0.024)
	0.353	0.338	0.302	0.391	0.410	0.486	0.016	0.016	0.009	0.040	0.044	0.180
T2: Individual + DIL&MIL	0.005	0.004	0.007	-0.008	-0.006	0.007	-0.060*	-0.060*	-0.063*	-0.060**	-0.058**	-0.046**
	(0.018)	(0.018)	(0.019)	(0.029)	(0.029)	(0.028)	(0.032)	(0.032)	(0.032)	(0.025)	(0.024)	(0.023)
	0.781	0.809	0.708	0.797	0.841	0.792	0.059	0.059	0.051	0.017	0.018	0.050
T3: Group + Only DIL	0.015	0.015	0.018	-0.018	-0.018	-0.006	-0.017	-0.017	-0.017	-0.034	-0.031	-0.023
	(0.019)	(0.019)	(0.020)	(0.032)	(0.032)	(0.033)	(0.030)	(0.030)	(0.032)	(0.023)	(0.022)	(0.022)
	0.353	0.338	0.302	0.581	0.580	0.852	0.578	0.578	0.588	0.130	0.156	0.295
T4: Group + DIL&MIL	0.048**	0.048**	0.035*	-0.001	0.000	-0.009	0.026	0.026	0.014	-0.006	-0.002	0.006
	(0.019)	(0.019)	(0.020)	(0.029)	(0.029)	(0.028)	(0.027)	(0.027)	(0.027)	(0.024)	(0.023)	(0.024)
	0.013	0.015	0.089	0.970	0.997	0.764	0.334	0.334	0.614	0.810	0.936	0.792
Control mean	0.056	0.056	0.056	0.131	0.131	0.131	0.108	0.108	0.108	0.081	0.081	0.081
Observations	1,844	1,844	1,702	1,844	1,844	1,702	1,799	1,799	1,658	1,799	1,796	1,658
p(T1=T2)	0.078	0.081	0.374	0.493	0.465	0.925	0.059	0.059	0.174	0.088	0.082	0.102
p(T3=T4)	0.170	0.171	0.100	0.355	0.347	0.148	0.511	0.511	0.419	0.642	0.630	0.401
p(T1=T3)	0.089	0.087	0.058	0.759	0.793	0.625	0.010	0.010	0.005	0.293	0.275	0.601
p(T2=T4)	0.031	0.029	0.167	0.794	0.808	0.517	0.002	0.002	0.007	0.004	0.003	0.008
Strata fixed efffects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline covariates	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Inverse probability weights (IPW)	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Notes: This table presents the results of the treatments on maternal and infant related complications as reported by the daughter-in-law (DIL) at the endline only. Each column represents a separate regression. The outcome variable of interests indicators which are 1 if the daughter-in-law reported that she or the infant experience complications during pregnancy, brith or after delivery, and 0 if they did not. Panel A shows the effect of the pooled treatments on the outcomes, where the treatment variable is 1 if the DIL or MIL belong to the group or individual treatment and 0 if they belong to the control group. Panel B presents results for the same outcome for all four treatments, where the treatment variable is 1 if the DIL or MIL belong to T1-T4 and 0 if they belong to the control group. We present three models for both participants: (1), (2), and (3). All models include strata fixed effects, and robust standard errors clustered at the village level are shown in parentheses. Model (2) also includes baseline covariates selected using post-double selection (Chernozhukov et al. (2018)), and model (3) includes inverse probability weights to account for differential attrition. We excluded 7 villages from the sample as they did not receive the treatments, and 14 control villages as they were given the treatment. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Figure 0.1: Study flow diagram



Notes:At midline, we dropped 7 villages from the study as they were contaminated, and at endline we dropped an addditional 14 control villages that accidently received the treatment. Villages were first randomized into Group or Individual treatments, and then households in each village were randomized into Only DIL or DIL & MIL treatments. Since one village can have multiple household level treatments, we only show unique number of villages here for T1-T4 and the midline and endlin totals. The loss to follow up for midline and endline are compared to control as we tried each village and household at endline even if we didn't get them at midline.

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Appendix A

Supplementary Tables and Figures

A.1 Tables

Table A.1: Phase-wise sample

	Baseline		Midline		Endline	
Phase	Villages	Households	Villages	Households	Villages	Households
1	66	479	56	354	65	442
2	59	497	58	447	59	445
3	65	576	64	476	65	494
4	51	442	51	399	51	361
5	55	415	54	353	52	295

Notes: This table presents the phase-wise sample for baseline, midlne and endline

Table A.2: Daughter-in-law summary statistics in baseline sample (N=2,409)

	Control (n=664)		T1: Individual + Only DIL (n=455)		T2: Individual + DIL&MIL (n=442)		T3:Group + Only DIL (n=421)		T4: Group + DIL&MIL (n=427)	
	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
Daughter-in-law characteristics										
Age at baseline	23.131	3.062	23.547	3.410	23.532	3.235	23.333	3.228	23.3	3.374
Years of schooling completed	9.039	3.491	8.657	3.474	8.425	3.298	8.77	3.412	8.593	3.59
Religion: Hindu	0.959	0.198	0.982	0.132	0.989	0.106	0.986	0.119	0.991	0.096
Social category: General	0.089	0.285	0.073	0.260	0.075	0.263	0.078	0.269	0.07	0.256
Social category: Scheduled caste/ Scheduled tribe	0.334	0.472	0.409	0.492	0.353	0.478	0.352	0.478	0.349	0.477
Social category: Other backward castes	0.550	0.498	0.424	0.495	0.511	0.5	0.482	0.5	0.52	0.5
Currently working outside the home	0.142	0.349	0.200	0.400	0.19	0.393	0.216	0.412	0.183	0.387
Household characteristics										
Total permanent household members	5.360	1.678	5.424	1.705	5.473	1.818	5.278	1.526	5.41	1.774
Household head is the mother-in-law	0.166	0.372	0.165	0.371	0.176	0.382	0.152	0.359	0.148	0.355
Household head is the father-in-law	0.166	0.372	0.165	0.371	0.176	0.382	0.152	0.359	0.148	0.355
Monthly household income < ₹2000 ($24)	0.444	0.497	0.468	0.500	0.446	0.498	0.475	0.5	0.482	0.5
Husband characteristics										
Husband's age	25.915	3.555	26.284	3.618	26.35	4.083	26.233	3.676	26.211	3.626
Husband's years of schooling completed	9.968	3.555	9.453	3.471	9.357	3.393	9.834	3.323	9.487	3.498
Husband's occupation:										
Daily wage worker	0.201	0.401	0.215	0.412	0.191	0.393	0.164	0.371	0.173	0.379
Agricultural worker	0.480	0.500	0.560	0.497	0.568	0.496	0.637	0.482	0.628	0.484
Migrant worker	0.154	0.361	0.073	0.260	0.091	0.288	0.086	0.28	0.07	0.256
Public sector employee	0.015	0.122	0.013	0.114	0.014	0.116	0.007	0.084	0.009	0.096
Private sector employee	0.095	0.293	0.088	0.283	0.09	0.287	0.067	0.249	0.056	0.231
Unemployed	0.032	0.175	0.029	0.167	0.018	0.134	0.026	0.16	0.04	0.196
Marriage characteristics										
Number of years married at baseline	3.612	3.151	3.640	3.403	3.627	3.337	3.47	3.122	3.527	3.212
Knew husband before marriage	0.270	0.444	0.231	0.422	0.215	0.411	0.185	0.389	0.218	0.413
Husband lives in the same household for at least 9 months in a year	0.965	0.183	0.974	0.160	0.975	0.156	0.964	0.186	0.958	0.201
Spend less than 6 hours alone with husband in a day	0.803	0.398	0.798	0.402	0.819	0.385	0.815	0.389	0.773	0.419
Husband spends less than 6 hours at home in a day	0.675	0.469	0.571	0.495	0.604	0.49	0.589	0.493	0.546	0.498
Husband discusses work often	0.503	0.500	0.543	0.499	0.523	0.5	0.518	0.5	0.562	0.497
Husband discusses community issues often	0.419	0.494	0.431	0.496	0.403	0.491	0.442	0.497	0.461	0.499
Husband discusses family issues often	0.544	0.498	0.565	0.496	0.55	0.498	0.546	0.498	0.574	0.495
Husband discusses family planning often	0.571	0.495	0.578	0.494	0.572	0.495	0.549	0.498	0.567	0.496

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Fertility history										
Been pregnant before	0.443	0.497	0.442	0.497	0.443	0.497	0.454	0.498	0.44	0.497
Number of previous pregnancies	1.520	0.817	1.478	0.889	1.597	0.926	1.524	0.832	1.495	0.862
Pregnancy ended in a live birth	0.422	0.494	0.431	0.496	0.434	0.496	0.442	0.497	0.426	0.495
Pregnancy ended in a stillbirth	0.027	0.163	0.018	0.132	0.009	0.095	0.024	0.152	0.014	0.118
Pregnancy ended in a miscarriage	0.003	0.055	0.004	0.066	0.005	0.067	0	0	0.005	0.068
Pregnancy ended in an abortion	0.003	0.055	0.002	0.047	0.000	0.000	0.002	0.049	0.002	0.048
Number of alive children	0.633	0.911	0.635	0.931	0.699	0.998	0.656	0.922	0.63	0.921
Health-seeking during most recent live birth										
Number of antenatal care (ANC) visits completed	1.615	2.351	1.196	0.979	1.204	1.157	1.319	0.923	1.344	1.391
Paid for ANC visit	0.436	0.497	0.462	0.500	0.422	0.495	0.412	0.494	0.431	0.497
Current pregnancy										
Gestational age at baseline (in months)	4.661	1.184	4.577	1.139	4.502	1.182	4.467	1.271	4.478	1.273
Pregnancy is registered with healthcare worker	0.931	0.254	0.905	0.293	0.939	0.24	0.933	0.249	0.927	0.26
Receiveda Mother and Child Protection (MCP) Card	0.814	0.389	0.784	0.412	0.778	0.416	0.822	0.383	0.788	0.409
Gone for any ANC visits	0.836	0.371	0.785	0.412	0.778	0.416	0.8	0.4	0.838	0.369
Number of ANC visits compeleted at baseline	1.392	0.951	1.242	0.904	1.260	0.958	1.247	0.887	1.290	0.88
ANC Knowledge Index										
Correctly identified ANC is important for detecting complications for the mother	0.690	0.463	0.686	0.465	0.688	0.464	0.715	0.452	0.7	0.459
Correctly identified ANC is important for detecting complications for the fetus	0.735	0.442	0.697	0.460	0.69	0.463	0.675	0.469	0.7	0.459
Correctly identified ANC is important for early intervention	0.611	0.488	0.569	0.496	0.618	0.487	0.575	0.495	0.581	0.494
Correctly identified total number of ANC visits recommended	0.742	0.438	0.640	0.481	0.661	0.474	0.658	0.475	0.658	0.475
Know about the Janani Shishu Suraksha (JSS) government benefit	0.795	0.404	0.653	0.477	0.681	0.467	0.696	0.461	0.719	0.45
Know the date of the Village Health and Nutrition Day (VHND)	0.803	0.398	0.745	0.436	0.742	0.438	0.774	0.419	0.768	0.423
Correctly identified riskier pregnancy in first described situation	0.732	0.443	0.723	0.448	0.742	0.438	0.758	0.429	0.698	0.46
Correctly identified riskier pregnancy in second described situation	0.387	0.487	0.376	0.485	0.346	0.476	0.38	0.486	0.386	0.487
Know the cost of an ANC visit	0.923	0.266	0.947	0.224	0.959	0.198	0.952	0.213	0.906	0.292

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Iron and Folic Acid (IFA) Knowledge Index										
Correctly identified the use of IFA supplements for blood volume	0.911	0.285	0.864	0.343	0.887	0.317	0.91	0.287	0.906	0.292
Correctly identified the use of IFA supplements to treat anemia	0.444	0.497	0.462	0.499	0.441	0.497	0.508	0.501	0.513	0.5
Know the risk of untreated anemia	0.902	0.297	0.824	0.381	0.86	0.348	0.808	0.395	0.794	0.405
Know the importance of IFA supplementation	0.651	0.477	0.653	0.477	0.643	0.48	0.646	0.479	0.637	0.481
Permission needed from husband on the following:										
Buy clothing for yourself	0.833	0.373	0.846	0.361	0.857	0.35	0.872	0.335	0.867	0.341
Buy things in the market	0.846	0.361	0.855	0.353	0.86	0.348	0.876	0.329	0.859	0.348
Visit a family planning clinic	0.875	0.331	0.870	0.336	0.86	0.348	0.881	0.324	0.857	0.35
Meet the ASHA worker	0.848	0.359	0.859	0.348	0.855	0.352	0.891	0.312	0.885	0.319
Visit the home of friends by yourself	0.870	0.336	0.897	0.305	0.907	0.29	0.912	0.283	0.946	0.226
Travel a short distance by bus or train or other public transport	0.893	0.309	0.901	0.299	0.9	0.3	0.907	0.29	0.911	0.285
Visit your maternal home	0.908	0.289	0.919	0.274	0.928	0.259	0.91	0.287	0.923	0.267
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.919	0.274	0.910	0.287	0.912	0.284	0.903	0.297	0.923	0.267
Permission needed from the mother-in-law on the following:										
Buy clothing for yourself	0.825	0.380	0.846	0.361	0.842	0.366	0.862	0.345	0.857	0.35
Buy things in the market	0.836	0.371	0.853	0.355	0.857	0.35	0.86	0.348	0.85	0.357
Visit a family planning clinic	0.848	0.359	0.848	0.359	0.848	0.359	0.86	0.348	0.855	0.353
Meet the ASHA worker	0.837	0.369	0.848	0.359	0.846	0.361	0.876	0.329	0.874	0.333
Visit the home of friends by yourself	0.864	0.343	0.888	0.316	0.91	0.287	0.922	0.269	0.932	0.252
Travel a short distance by bus or train or other public transport	0.886	0.319	0.903	0.296	0.91	0.287	0.914	0.28	0.913	0.282
Visit your maternal home	0.911	0.285	0.901	0.299	0.928	0.259	0.914	0.28	0.916	0.278
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.920	0.271	0.908	0.290	0.919	0.274	0.91	0.287	0.916	0.278
Restrictive relationship with mother-in-law										
MIL limits contact with female friends	0.511	0.500	0.607	0.489	0.563	0.497	0.627	0.484	0.6	0.491
MIL limits contact with maternal household members	0.474	0.500	0.587	0.493	0.552	0.498	0.582	0.494	0.578	0.494
Cannot discuss issues relating to your health or women's health in general with MIL	0.220	0.414	0.152	0.359	0.149	0.357	0.152	0.359	0.171	0.377
MIL gets upset if you disagree with her on something	0.431	0.496	0.578	0.494	0.57	0.496	0.553	0.498	0.576	0.495
Feel nervous discussing issues or arguing with MIL	0.432	0.496	0.481	0.500	0.493	0.501	0.416	0.493	0.426	0.495

(continued on next page.)

Adherence to social norms												
A woman's most important role is to be a good homemaker	0.878	0.328	0.886	0.319	0.889	0.314	0.924	0.265	0.906	0.292		
It is not good for pregnant women to be seen alone in public	0.822	0.383	0.807	0.395	0.846	0.361	0.853	0.355	0.848	0.36		
A woman should tolerate violence to keep the family together	0.527	0.500	0.571	0.495	0.577	0.495	0.589	0.493	0.6	0.491		
A daughter-in-law should not argue with her mother-in-law	0.837	0.369	0.824	0.381	0.857	0.35	0.867	0.34	0.857	0.35		
A daughter-in-law should listen to her mother-in-law regarding maternal health issues	0.926	0.262	0.936	0.245	0.952	0.213	0.931	0.254	0.937	0.244		
Women should be able to travel on their own to health centers	0.133	0.339	0.171	0.377	0.176	0.382	0.081	0.273	0.126	0.333		

This table presents the means and standard deviations of daughters-in-law reported covariates in the control and treatment groups at baseline, prior to any intervention and post-randomization. For binary characteristics, it shows the proportion of daughters-in-law.

Table A.3: Baseline covariate balance of baseline sample (DIL responses only) (N=2,409)

	Pairwise differences *p*-values							
	Control vs. T1	Control vs. T2	Control vs.T3	Control vs.T4	T1 vs.T2	T3 vs. T4	T1 vs. T3	T2 vs.T4
Daughter-in-law characteristics								
Age at baseline	0.601	0.404	0.5	0.938	0.765	0.89	0.375	0.746
Years of schooling completed	0.225	0.011 **	0.73	0.756	0.149	0.35	0.245	0.49
Religion: Hindu	0.283	0.126	0.072 *	0.054 *	0.42	0.65	0.549	0.675
Social category: General	0.303	0.486	0.52	0.501	0.884	0.48	0.543	0.852
Social category: Scheduled caste/ Scheduled tribe	0.034 **	0.704	0.713	0.953	0.046 **	0.75	0.254	0.5
Social category: Other backward castes	0.011 **	0.62	0.71	0.761	0.019 **	0.25	0.148	0.739
Currently working outside the home	0.546	0.546	0.534	0.446	0.881	0.46	0.314	0.374
Household characteristics								
Total permanent household members	0.881	0.888	0.94	0.645	0.393	0.4	0.576	0.464
Household head is the mother-in-law	0.974	0.486	0.457	0.989	0.774	0.72	0.881	0.232
Household head is the father-in-law	0.326	0.21	0.212	0.631	0.856	0.2	0.607	0.074 *
Monthly household income < ₹2000 ($24)	0.241	0.32	0.188	0.268	0.757	0.58	0.572	0.784
Husband characteristics								
Husband's age	0.842	0.582	0.809	0.457	0.67	0.71	0.956	0.879
Husband's years of schooling completed	0.012 **	0.002 ***	0.936	0.311	0.753	0.13	0.057 *	0.444
Husband's occupation:								
Daily wage worker	0.082 *	0.375	0.445	0.41	0.188	0.81	0.401	0.948
Agricultural worker	0.418	0.302	0.007 ***	0.015 **	0.782	0.71	0.427	0.268
Migrant worker	0.005 ***	0.114	0.019 **	0.013 **	0.164	0.32	0.485	0.559
Public sector employee	0.716	0.922	0.083 *	0.494	0.716	0.85	0.643	0.465
Private sector employee	0.901	0.98	0.269	0.093 *	0.983	0.4	0.551	0.062 *
Unemployed	0.469	0.237	0.568	0.563	0.554	0.41	0.9	0.063 *
Marriage characteristics								
Number of years married at baseline	0.974	0.911	0.012 **	0.456	0.928	0.57	0.178	0.693
Knew husband before marriage	0.019 **	0.022 **	0.206	0.642	0.889	0.23	0.104	0.047 **
Husband lives in the same household for at least 9 months in a year	0.248	0.224	0.85	0.784	0.961	0.85	0.264	0.113
Spend less than 6 hours alone with husband in a day	0.661	0.98	0.629	0.293	0.621	0.14	0.522	0.521
Husband spends less than 6 hours at home in a day	0.17	0.479	0.081 *	0.088 *	0.046 **	0.21	0.682	0.404
Husband discusses work often	0.022 **	0.093 *	0.045 **	0.017 **	0.381	0.22	0.519	0.644
Husband discusses community issues often	0.061 *	0.108	0.02 **	0.02 **	0.54	0.83	0.932	0.449
Husband discusses family issues often	0.205	0.245	0.016 **	0.026 **	0.749	0.94	0.873	0.583
Husband discusses family planning often	0.028 **	0.026 **	0.046 **	0.039 **	0.958	0.81	0.478	0.603

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Fertility history								
Been pregnant before	0.339	0.46	0.353	0.883	0.77	0.61	0.885	0.861
Number of previous pregnancies	0.798	0.127	0.908	0.94	0.16	0.56	0.911	0.268
Pregnancy ended in a live birth	0.659	0.259	0.239	0.771	0.874	0.73	0.85	0.208
Pregnancy ended in a stillbirth	0.846	0.023 **	0.473	0.244	0.212	0.27	0.667	0.48
Pregnancy ended in a miscarriage	0.467	0.435	0.177	0.755	0.91	0.17	0.164	0.534
Pregnancy ended in an abortion	0.608	0.276	0.697	0.739	0.352	0.91	0.833	0.297
Number of alive children	0.841	0.023 **	0.884	0.561	0.146	0.97	0.77	0.039 **
Health-seeking during most recent live birth								
Number of antenatal care (ANC) visits completed	0.047 **	0.118	0.254	0.502	0.616	0.63	0.283	0.426
Paid for ANC visit	0.822	0.346	0.547	0.62	0.052 *	0.62	0.433	0.935
Current pregnancy								
Gestational age at baseline (in months)	0.44	0.779	0.657	0.955	0.567	0.96	0.984	0.593
Pregnancy is registered with healthcare worker	0.046 **	0.625	0.803	0.638	0.011 **	0.71	0.01 **	0.966
Receiveda Mother and Child Protection (MCP) Card	0.07 *	0.041 **	0.338	0.055 *	0.837	0.11	0.325	0.895
Gone for any ANC visits	0.046 **	0.059 *	0.536	0.757	0.904	0.07 *	0.172	0.063 *
Number of ANC visits compeleted at baseline	0.079 *	0.271	0.259	0.489	0.413	0.46	0.515	0.687
ANC Knowledge Index								
Correctly identified ANC is important for detecting complications for the mother	0.532	0.306	0.357	0.735	0.754	0.51	0.683	0.832
Correctly identified ANC is important for detecting complications for the fetus	0.608	0.844	0.326	0.728	0.968	0.37	0.522	0.757
Correctly identified ANC is important for early intervention	0.06 *	0.193	0.176	0.203	0.009 ***	0.78	0.449	0.888
Correctly identified total number of ANC visits recommended	0.007 ***	0.012 **	0.025 **	0.018 **	0.364	0.83	0.822	0.802
Know about the Janani Shishu Suraksha (JSS) government benefit	0.003 ***	0.013 **	0.002 ***	0.021 **	0.149	0.14	0.77	0.537
Know the date of the Village Health and Nutrition Day (VHND)	0.047 **	0.045 **	0.105	0.061 *	0.972	0.72	0.404	0.752
Correctly identified riskier pregnancy in first described situation	0.151	0.089 *	0.689	0.146	0.468	0.05 *	0.325	0.921
Correctly identified riskier pregnancy in second described situation	0.574	0.085 *	0.298	0.261	0.27	0.88	0.766	0.454
Know the cost of an ANC visit	0.314	0.131	0.193	0.812	0.462	0 ***	0.979	0.05 *

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Iron and Folic Acid (IFA) Knowledge Index								
Correctly identified the use of IFA supplements for blood volume	0.062 *	0.236	0.14	0.132	0.376	0.72	0.187	0.443
Correctly identified the use of IFA supplements to treat anemia	0.652	0.706	0.653	0.4	0.886	0.76	0.353	0.106
Know the risk of untreated anemia	0.402	0.59	0.231	0.098 *	0.204	0.3	0.983	0.289
Know the importance of IFA supplementation	0.448	0.625	0.117	0.146	0.557	0.92	0.886	0.946
Permission needed from husband on the following:								
Buy clothing for yourself	0.456	0.769	0.62	0.196	0.639	0.85	0.733	0.313
Buy things in the market	0.332	0.408	0.61	0.041 **	0.915	0.48	0.684	0.245
Visit a family planning clinic	0.378	0.059 *	0.262	0.012 **	0.209	0.47	0.423	0.225
Meet the ASHA worker	0.604	0.268	0.979	0.611	0.477	0.77	0.988	0.665
Visit the home of friends by yourself	0.946	0.563	0.498	0.087 *	0.56	0.01 ***	0.437	0.155
Travel a short distance by bus or train or other public transport	0.923	0.894	0.954	0.433	0.971	0.51	0.427	0.929
Visit your maternal home	0.982	0.55	0.257	0.839	0.478	0.22	0.067 *	0.294
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.559	0.614	0.068 *	0.775	0.712	0.03 **	0.128	0.827
Permission needed from the mother-in-law on the following:								
Buy clothing for yourself	0.655	0.278	0.433	0.081 *	0.35	0.74	0.531	0.511
Buy things in the market	0.571	0.662	0.294	0.041 **	0.893	0.86	0.268	0.238
Visit a family planning clinic	0.594	0.442	0.185	0.217	0.783	0.43	0.436	0.673
Meet the ASHA worker	0.587	0.267	0.406	0.224	0.513	0.48	0.695	0.934
Visit the home of friends by yourself	0.849	0.31	0.567	0.298	0.136	0.36	0.761	0.851
Travel a short distance by bus or train or other public transport	0.613	0.327	0.368	0.074 *	0.67	0.74	0.736	0.831
Visit your maternal home	0.203	0.736	0.34	0.698	0.037 **	0.45	0.543	0.206
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.417	0.978	0.186	0.924	0.224	0.44	0.311	0.655
Restrictive relationship with mother-in-law								
MIL limits contact with female friends	0.488	0.091 *	0.274	0.827	0.276	0.31	0.309	0.154
MIL limits contact with maternal household members	0.941	0.269	0.439	0.299	0.307	0.56	0.966	0.198
Cannot discuss issues relating to your health or women's health in general with MIL	0.485	0.254	0.074 *	0.246	0.836	0.24	0.955	0.488
MIL gets upset if you disagree with her on something	0.173	0.224	0.021 **	0.019 **	0.583	0.79	0.951	0.6
Feel nervous discussing issues or arguing with MIL	0.516	0.444	0.895	0.498	0.807	0.92	0.904	0.855

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Adherence to social norms									
A woman's most important role is to be a good homemaker	0.333	0.132	0.204	0.401	0.465	0.35	0.874	0.87	
It is not good for pregnant women to be seen alone in public	0.904	0.226	0.956	0.903	0.049 **	0.99	0.683	0.605	
A woman should tolerate violence to keep the family together	0.343	0.236	0.759	0.363	0.911	0.33	0.735	0.62	
A daughter-in-law should not argue with her mother-in-law	0.592	0.258	0.751	0.978	0.348	0.85	0.758	0.439	
A daughter-in-law should listen to her mother-in-law regarding maternal health issues	0.867	0.639	0.375	0.955	0.447	0.23	0.206	0.247	
Women should be able to travel on their own to health centers	0.642	0.712	0.15	0.684	0.72	0.05 *	0.183	0.522	

The table includes two types of pairwise comparisons: the first set of p-values indicates significant differences between the control group and each treatment group, and the second set compares the treatment groups of interest for the analysis. The displayed p-values result from a regression of the dependent variable on an indicator variable for each treatment group, with the control vs. treatment groups and an indicator variable using the first treatment group specified as the reference category. Strata fixed effects are included, and standard errors are clustered at the village level (not shown here). * denotes statistical significance at 10 pct, ** at 5 pct, and *** at 1 pct level.

Table A.4: Daughter-in-law summary statistics in midline sample (N=1,991)

	Control (n=511)		T1: Individual + Only DIL (n=390)		T2: Individual + DIL&MIL (n=358)		T3:Group + Only DIL (n=365)		T4: Group + DIL&MIL (n=367)	
	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
Daughter-in-law characteristics										
Age at baseline	23.043	3.017	23.595	3.397	23.372	3.033	23.189	3.142	23.237	3.413
Years of schooling completed	8.9	3.431	8.764	3.464	8.648	3.217	8.781	3.484	8.695	3.615
Religion: Hindu	0.949	0.22	0.99	0.101	0.994	0.075	0.984	0.127	0.989	0.104
Social category: General	0.096	0.295	0.072	0.258	0.075	0.264	0.082	0.275	0.071	0.257
Social category: Scheduled caste/ Scheduled tribe	0.315	0.465	0.413	0.493	0.36	0.481	0.34	0.474	0.354	0.479
Social category: Other backward castes	0.564	0.496	0.433	0.496	0.52	0.5	0.51	0.501	0.523	0.5
Currently working outside the home	0.145	0.352	0.185	0.388	0.187	0.391	0.211	0.409	0.183	0.387
Household characteristics										
Total permanent household members	5.36	1.674	5.362	1.682	5.38	1.743	5.334	1.552	5.417	1.8
Household head is the mother-in-law	0.166	0.373	0.156	0.364	0.17	0.377	0.164	0.371	0.142	0.349
Household head is the father-in-law	0.166	0.373	0.156	0.364	0.17	0.377	0.164	0.371	0.142	0.349
Monthly household income < ₹2000 ($24)	0.489	0.5	0.454	0.499	0.447	0.498	0.452	0.498	0.463	0.499
Husband characteristics										
Husband's age	25.851	3.501	26.323	3.617	25.983	3.74	26.055	3.513	26.093	3.597
Husband's years of schooling completed	9.859	3.56	9.59	3.492	9.52	3.305	9.899	3.373	9.616	3.457
Husband's occupation:										
Daily wage worker	0.212	0.409	0.236	0.425	0.188	0.391	0.162	0.369	0.18	0.385
Agricultural worker	0.507	0.5	0.536	0.499	0.579	0.494	0.633	0.483	0.635	0.482
Migrant worker	0.134	0.341	0.072	0.258	0.084	0.278	0.09	0.287	0.063	0.243
Public sector employee	0.012	0.108	0.013	0.113	0.017	0.129	0.008	0.09	0.011	0.104
Private sector employee	0.094	0.292	0.092	0.29	0.087	0.282	0.071	0.258	0.052	0.222
Unemployed	0.028	0.164	0.026	0.158	0.014	0.118	0.022	0.147	0.038	0.192
Marriage characteristics										
Number of years married at baseline	3.585	3.157	3.654	3.497	3.43	3.146	3.427	3.071	3.499	3.225
Knew husband before marriage	0.272	0.445	0.223	0.417	0.212	0.41	0.186	0.39	0.215	0.412
Husband lives in the same household for at least 9 months in a year	0.971	0.169	0.977	0.15	0.986	0.118	0.967	0.179	0.965	0.185
Spend less than 6 hours alone with husband in a day	0.785	0.411	0.777	0.417	0.813	0.391	0.822	0.383	0.787	0.41
Husband spends less than 6 hours at home in a day	0.671	0.47	0.546	0.499	0.584	0.494	0.597	0.491	0.556	0.498
Husband discusses work often	0.509	0.5	0.564	0.497	0.528	0.5	0.521	0.5	0.564	0.497
Husband discusses community issues often	0.44	0.497	0.446	0.498	0.425	0.495	0.449	0.498	0.466	0.5
Husband discusses family issues often	0.569	0.496	0.572	0.495	0.539	0.499	0.542	0.499	0.578	0.495
Husband discusses family planning often	0.577	0.494	0.59	0.493	0.581	0.494	0.542	0.499	0.559	0.497

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Fertility history										
Been pregnant before	0.44	0.497	0.436	0.497	0.416	0.494	0.449	0.498	0.436	0.497
Number of previous pregnancies	1.524	0.808	1.494	0.905	1.537	0.927	1.512	0.787	1.475	0.839
Pregnancy ended in a live birth	0.419	0.494	0.428	0.495	0.405	0.492	0.441	0.497	0.42	0.494
Pregnancy ended in a stillbirth	0.027	0.163	0.018	0.133	0.011	0.105	0.022	0.147	0.016	0.127
Pregnancy ended in a miscarriage	0.004	0.062	0.003	0.051	0.006	0.075	0	0	0.005	0.074
Pregnancy ended in an abortion	0.004	0.062	0	0	0	0	0.003	0.052	0.003	0.052
Number of alive children	0.636	0.912	0.638	0.94	0.628	0.955	0.647	0.892	0.605	0.89
Health-seeking during most recent live birth										
Number of antenatal care (ANC) visits completed	1.375	1.673	1.184	1.026	1.215	1.288	1.325	0.967	1.289	1.286
Paid for ANC visit	0.423	0.495	0.414	0.494	0.408	0.493	0.42	0.495	0.422	0.496
Current pregnancy										
Gestational age at baseline (in months)	4.595	1.189	4.571	1.142	4.478	1.173	4.423	1.257	4.387	1.277
Pregnancy is registered with healthcare worker	0.918	0.275	0.903	0.297	0.933	0.25	0.934	0.248	0.924	0.266
Receiveda Mother and Child Protection (MCP) Card	0.795	0.404	0.776	0.418	0.769	0.422	0.836	0.371	0.785	0.412
Gone for any ANC visits	0.826	0.38	0.782	0.413	0.76	0.428	0.792	0.407	0.826	0.38
Number of ANC visits compeleted at baseline	1.362	0.952	1.256	0.916	1.246	0.982	1.211	0.866	1.232	0.864
ANC Knowledge Index										
Correctly identified ANC is important for detecting complications for the mother	0.701	0.458	0.682	0.466	0.687	0.464	0.696	0.461	0.711	0.454
Correctly identified ANC is important for detecting complications for the fetus	0.763	0.426	0.692	0.462	0.682	0.467	0.658	0.475	0.711	0.454
Correctly identified ANC is important for early intervention	0.613	0.488	0.577	0.495	0.626	0.485	0.581	0.494	0.597	0.491
Correctly identified total number of ANC visits recommended	0.767	0.423	0.659	0.475	0.676	0.469	0.677	0.468	0.643	0.48
Know about the Janani Shishu Suraksha (JSS) government benefit	0.798	0.402	0.649	0.478	0.687	0.464	0.682	0.466	0.7	0.459
Know the date of the Village Health and Nutrition Day (VHND)	0.793	0.406	0.749	0.434	0.743	0.438	0.756	0.43	0.752	0.432
Correctly identified riskier pregnancy in first described situation	0.746	0.436	0.705	0.457	0.737	0.441	0.77	0.421	0.7	0.459
Correctly identified riskier pregnancy in second described situation	0.37	0.483	0.374	0.485	0.344	0.476	0.395	0.489	0.39	0.488
Know the cost of an ANC visit	0.914	0.281	0.949	0.221	0.953	0.213	0.953	0.211	0.907	0.29

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Permission needed from husband on the following:										
Buy clothing for yourself	0.845	0.362	0.841	0.366	0.866	0.341	0.866	0.341	0.869	0.338
Buy things in the market	0.857	0.35	0.849	0.359	0.866	0.341	0.871	0.335	0.864	0.344
Visit a family planning clinic	0.896	0.305	0.862	0.346	0.866	0.341	0.874	0.332	0.864	0.344
Meet the ASHA worker	0.867	0.34	0.851	0.356	0.855	0.353	0.89	0.313	0.894	0.309
Visit the home of friends by yourself	0.881	0.325	0.897	0.304	0.911	0.286	0.907	0.291	0.94	0.238
Travel a short distance by bus or train or other public transport	0.904	0.295	0.9	0.3	0.908	0.29	0.901	0.299	0.907	0.29
Visit your maternal home	0.912	0.284	0.913	0.282	0.93	0.255	0.899	0.302	0.916	0.278
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.933	0.249	0.908	0.29	0.922	0.269	0.899	0.302	0.918	0.274
Permission needed from the mother-in-law on the following:										
Buy clothing for yourself	0.834	0.373	0.838	0.368	0.846	0.361	0.858	0.35	0.856	0.352
Buy things in the market	0.845	0.362	0.846	0.361	0.86	0.347	0.855	0.353	0.847	0.36
Visit a family planning clinic	0.869	0.338	0.844	0.364	0.858	0.35	0.855	0.353	0.861	0.346
Meet the ASHA worker	0.847	0.36	0.836	0.371	0.852	0.356	0.877	0.329	0.877	0.328
Visit the home of friends by yourself	0.867	0.34	0.885	0.32	0.916	0.277	0.915	0.279	0.929	0.257
Travel a short distance by bus or train or other public transport	0.9	0.3	0.897	0.304	0.916	0.277	0.91	0.287	0.907	0.29
Visit your maternal home	0.916	0.278	0.895	0.307	0.93	0.255	0.907	0.291	0.907	0.29
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.933	0.249	0.903	0.297	0.927	0.26	0.907	0.291	0.91	0.286
Restrictive relationship with mother-in-law										
MIL limits contact with female friends	0.503	0.5	0.59	0.493	0.573	0.495	0.641	0.48	0.621	0.486
MIL limits contact with maternal household members	0.472	0.5	0.569	0.496	0.567	0.496	0.605	0.489	0.599	0.491
Cannot discuss issues relating to your health or women's health in general with MIL	0.211	0.409	0.146	0.354	0.142	0.35	0.137	0.344	0.166	0.373
MIL gets upset if you disagree with her on something	0.425	0.495	0.582	0.494	0.561	0.497	0.575	0.495	0.589	0.493
Feel nervous discussing issues or arguing with MIL	0.434	0.496	0.459	0.499	0.48	0.5	0.416	0.494	0.425	0.495

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Adherence to social norms													
A woman's most important role is to be a good homemaker	0.902	0.297		0.867	0.34		0.877	0.329		0.921	0.271		0.907	0.29		0.42	
It is not good for pregnant women to be seen alone in public	0.798	0.402		0.8	0.401		0.846	0.361		0.847	0.361		0.842	0.365		0.932	
A woman should tolerate violence to keep the family together	0.548	0.498		0.59	0.493		0.592	0.492		0.614	0.488		0.613	0.488		0.448	
A daughter-in-law should not argue with her mother-in-law	0.824	0.381		0.831	0.375		0.855	0.353		0.863	0.344		0.864	0.344		0.599	
A daughter-in-law should listen to her mother-in-law regarding maternal health issues	0.914	0.281		0.938	0.241		0.958	0.201		0.929	0.258		0.937	0.243		0.765	
Women should be able to travel on their own to health centers	0.1	0.3		0.177	0.382		0.165	0.372		0.088	0.283		0.134	0.341		0.592	

This table presents the means and standard deviations of daughters-in-law reported covariates in the control and treatment groups at baseline, prior to any intervention and post-randomization. For binary characteristics, it shows the proportion of daughters-in-law.

Table A.5: Baseline covariate balance of midline sample (DIL responses only) (N=1,991)

	Pairwise differences *p*-values							
	Control vs. T1	Control vs. T2	Control vs.T3	Control vs.T4	T1 vs.T2	T3 vs. T4	T1 vs. T3	T2 vs.T4
Daughter-in-law characteristics								
Age at baseline	0.524	0.499	0.437	0.936	0.94	0.819	0.331	0.985
Years of schooling completed	0.396	0.039 **	0.589	0.967	0.189	0.422	0.301	0.592
Religion: Hindu	0.114	0.017 **	0.065 *	0.052 *	0.352	0.644	0.847	0.647
Social category: General	0.26	0.445	0.448	0.506	0.816	0.549	0.383	0.676
Social category: Scheduled caste/ Scheduled tribe	0.033 **	0.703	0.732	0.898	0.045 **	0.791	0.217	0.49
Social category: Other backward castes	0.012 **	0.636	0.791	0.682	0.021 **	0.293	0.14	0.63
Currently working outside the home	0.923	0.553	0.475	0.374	0.839	0.437	0.344	0.373
Household characteristics								
Total permanent household members	0.808	0.958	0.99	0.625	0.342	0.449	0.452	0.412
Household head is the mother-in-law	0.772	0.436	0.676	0.663	0.587	0.716	0.848	0.067 *
Household head is the father-in-law	0.441	0.213	0.422	0.382	0.98	0.255	0.505	0.029 **
Monthly household income < ₹2000 ($24)	0.517	0.841	0.32	0.495	0.525	0.576	0.545	0.61
Husband characteristics								
Husband's age	0.764	0.79	0.675	0.509	0.915	0.646	0.83	0.637
Husband's years of schooling completed	0.039 **	0.009 ***	0.708	0.54	0.724	0.146	0.086 *	0.54
Husband's occupation:								
Daily wage worker	0.144	0.605	0.684	0.593	0.159	0.825	0.4	0.963
Agricultural worker	0.471	0.235	0.006 ***	0.013 **	0.58	0.638	0.426	0.382
Migrant worker	0.009 ***	0.095 *	0.036 **	0.026 **	0.333	0.309	0.443	0.835
Public sector employee	0.923	0.935	0.117	0.666	0.724	0.857	0.637	0.455
Private sector employee	0.765	0.773	0.293	0.105	0.886	0.34	0.554	0.035 **
Unemployed	0.523	0.247	0.583	0.492	0.566	0.406	0.817	0.07 *
Marriage characteristics								
Number of years married at baseline	0.904	0.545	0.006 ***	0.375	0.71	0.58	0.183	0.923
Knew husband before marriage	0.017 **	0.024 **	0.184	0.562	0.949	0.262	0.11	0.066 *
Husband lives in the same household for at least 9 months in a year	0.284	0.08 *	0.919	0.731	0.282	0.847	0.276	0.01 **
Spend less than 6 hours alone with husband in a day	0.584	0.901	0.546	0.329	0.653	0.259	0.627	0.607
Husband spends less than 6 hours at home in a day	0.153	0.369	0.092 *	0.089 *	0.066 *	0.201	0.634	0.474
Husband discusses work often	0.024 **	0.124	0.067 *	0.03 **	0.234	0.223	0.457	0.635
Husband discusses community issues often	0.084 *	0.133	0.034 **	0.034 **	0.536	0.829	0.978	0.543
Husband discusses family issues often	0.201	0.263	0.026 **	0.041 **	0.594	0.945	0.946	0.55
Husband discusses family planning often	0.025 **	0.034 **	0.062 *	0.048 **	0.715	0.806	0.433	0.634

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Fertility history								
Been pregnant before	0.842	0.665	0.995	0.407	0.813	0.588	0.767	0.482
Number of previous pregnancies	0.663	0.334	0.662	0.88	0.25	0.583	0.951	0.379
Pregnancy ended in a live birth	0.609	0.283	0.233	0.753	0.902	0.745	0.86	0.207
Pregnancy ended in a stillbirth	0.864	0.025 **	0.444	0.235	0.22	0.259	0.64	0.477
Pregnancy ended in a miscarriage	0.533	0.443	0.162	0.825	0.878	0.173	0.163	0.529
Pregnancy ended in an abortion	0.613	0.301	0.68	0.716	0.351	0.932	0.79	0.294
Number of alive children	0.963	0.112	0.885	0.813	0.227	0.96	0.784	0.072 *
Health-seeking during most recent live birth								
Number of antenatal care (ANC) visits completed	0.116	0.211	0.853	0.689	0.72	0.587	0.301	0.423
Paid for ANC visit	1	0.22	0.416	0.488	0.059 *	0.53	0.398	0.897
Current pregnancy								
Gestational age at baseline (in months)	0.478	0.115	0.699	0.339	0.346	0.742	0.324	0.728
Pregnancy is registered with healthcare worker	0.067 *	0.664	0.758	0.714	0.016 **	0.715	0.012 **	0.978
Receiveda Mother and Child Protection (MCP) Card	0.089 *	0.041 **	0.402	0.071 *	0.788	0.108	0.331	0.957
Gone for any ANC visits	0.101	0.095 *	0.704	0.556	0.867	0.066 *	0.229	0.051 *
Number of ANC visits compeleted at baseline	0.193	0.452	0.443	0.797	0.518	0.463	0.582	0.58
ANC Knowledge Index								
Correctly identified ANC is important for detecting complications for the mother	0.55	0.415	0.461	0.895	0.885	0.492	0.682	0.909
Correctly identified ANC is important for detecting complications for the fetus	0.458	0.684	0.301	0.677	0.952	0.341	0.59	0.739
Correctly identified ANC is important for early intervention	0.068 *	0.193	0.144	0.208	0.011 **	0.649	0.528	0.848
Correctly identified total number of ANC visits recommended	0.005 ***	0.009 ***	0.013 **	0.011 **	0.385	0.828	0.79	0.868
Know about the Janani Shishu Suraksha (JSS) government benefit	0.006 ***	0.029 **	0.004 ***	0.035 **	0.17	0.162	0.787	0.524
Know the date of the Village Health and Nutrition Day (VHND)	0.069 *	0.05 *	0.155	0.097 *	0.91	0.698	0.371	0.612
Correctly identified riskier pregnancy in first described situation	0.135	0.075 *	0.641	0.122	0.525	0.027 **	0.277	0.853
Correctly identified riskier pregnancy in second described situation	0.787	0.171	0.471	0.395	0.343	0.722	0.699	0.514
Know the cost of an ANC visit	0.298	0.119	0.158	0.886	0.464	0.004 ***	0.993	0.052 *

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Iron and Folic Acid (IFA) Knowledge Index								
Correctly identified the use of IFA supplements for blood volume	0.086 *	0.279	0.208	0.193	0.48	0.686	0.185	0.386
Correctly identified the use of IFA supplements to treat anemia	0.796	0.794	0.615	0.375	0.856	0.732	0.4	0.119
Know the risk of untreated anemia	0.444	0.648	0.266	0.13	0.193	0.323	0.95	0.274
Know the importance of IFA supplementation	0.428	0.557	0.106	0.153	0.602	0.984	0.836	0.829
Permission needed from husband on the following:								
Buy clothing for yourself	0.55	0.772	0.916	0.353	0.807	0.908	0.744	0.375
Buy things in the market	0.379	0.452	0.962	0.099 *	0.899	0.426	0.736	0.284
Visit a family planning clinic	0.318	0.07 *	0.333	0.016 **	0.257	0.441	0.419	0.202
Meet the ASHA worker	0.508	0.21	0.879	0.601	0.449	0.796	0.988	0.639
Visit the home of friends by yourself	0.918	0.542	0.578	0.072 *	0.568	0.004 ***	0.354	0.154
Travel a short distance by bus or train or other public transport	0.76	0.636	0.781	0.31	0.922	0.474	0.309	0.864
Visit your maternal home	0.925	0.541	0.343	0.977	0.309	0.2	0.092 *	0.346
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.687	0.827	0.108	0.58	0.638	0.025 **	0.08 *	0.905
Permission needed from the mother-in-law on the following:								
Buy clothing for yourself	0.675	0.306	0.691	0.127	0.335	0.879	0.556	0.477
Buy things in the market	0.547	0.6	0.453	0.052 *	0.878	0.739	0.273	0.211
Visit a family planning clinic	0.695	0.61	0.286	0.298	0.9	0.444	0.375	0.514
Meet the ASHA worker	0.496	0.19	0.438	0.19	0.467	0.48	0.689	0.892
Visit the home of friends by yourself	0.929	0.298	0.461	0.228	0.14	0.303	0.916	0.979
Travel a short distance by bus or train or other public transport	0.521	0.209	0.287	0.042 **	0.478	0.648	0.608	0.59
Visit your maternal home	0.208	0.782	0.406	0.885	0.039 **	0.358	0.466	0.212
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.449	0.857	0.256	0.92	0.109	0.366	0.253	0.415
Restrictive relationship with mother-in-law								
MIL limits contact with female friends	0.511	0.104	0.268	0.751	0.276	0.342	0.291	0.105
MIL limits contact with maternal household members	0.921	0.319	0.462	0.284	0.376	0.472	0.972	0.186
Cannot discuss issues relating to your health or women's health in general with MIL	0.577	0.353	0.086 *	0.281	0.886	0.255	0.919	0.569
MIL gets upset if you disagree with her on something	0.213	0.282	0.022 **	0.018 **	0.527	0.762	0.932	0.436
Feel nervous discussing issues or arguing with MIL	0.503	0.431	0.98	0.523	0.786	0.904	0.952	0.94

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Adherence to social norms									
A woman's most important role is to be a good homemaker	0.42	0.211	0.273	0.487	0.503	0.341	0.792	0.993	
It is not good for pregnant women to be seen alone in public	0.932	0.19	0.896	0.871	0.038 **	0.968	0.641	0.633	
A woman should tolerate violence to keep the family together	0.448	0.279	0.888	0.488	0.946	0.324	0.704	0.709	
A daughter-in-law should not argue with her mother-in-law	0.599	0.281	0.614	0.878	0.421	0.787	0.62	0.425	
A daughter-in-law should listen to her mother-in-law regarding maternal health issues	0.765	0.709	0.299	0.844	0.356	0.235	0.217	0.198	
Women should be able to travel on their own to health centers	0.592	0.586	0.23	0.87	0.628	0.052 *	0.227	0.561	

The table includes two types of pairwise comparisons: the first set of p-values indicates significant differences between the control group and each treatment group, and the second set compares the treatment groups of interest for the analysis. The displayed p-values result from a regression of the dependent variable on an indicator variable for each treatment group, with the control vs. treatment groups and an indicator variable using the first treatment group specified as the reference category. Strata fixed effects are included, and standard errors are clustered at the village level (not shown here). * denotes statistical significance at 10 pct, ** at 5 pct, and *** at 1 pct level.

Table A.6: Daughter-in-law summary statistics in endline sample (N=1,844)

	Control (n=444)		T1: Individual + Only DIL (n=361)		T2: Individual + DIL&MIL (n=361)		T3:Group + Only DIL (n=333)		T4: Group + DIL&MIL (n=345)	
	mean	sd	mean	sd	mean	sd	mean	sd	mean	sd
Daughter-in-law characteristics										
Age at baseline	23.182	3.092	23.579	3.446	23.499	3.076	23.402	3.202	23.307	3.404
Years of schooling completed	8.829	3.533	8.765	3.514	8.673	3.077	8.793	3.43	8.577	3.697
Religion: Hindu	0.966	0.181	0.983	0.128	0.994	0.074	0.985	0.122	0.991	0.093
Social category: General	0.088	0.283	0.083	0.276	0.072	0.259	0.084	0.278	0.078	0.269
Social category: Scheduled caste/ Scheduled tribe	0.313	0.464	0.407	0.492	0.332	0.472	0.345	0.476	0.368	0.483
Social category: Other backward castes	0.574	0.495	0.449	0.498	0.54	0.499	0.505	0.501	0.519	0.5
Currently working outside the home	0.153	0.361	0.188	0.392	0.18	0.385	0.207	0.406	0.18	0.385
Household characteristics										
Total permanent household members	5.264	1.576	5.424	1.677	5.463	1.806	5.342	1.478	5.42	1.752
Household head is the mother-in-law	0.162	0.369	0.172	0.378	0.183	0.387	0.165	0.372	0.174	0.38
Household head is the father-in-law	0.791	0.407	0.753	0.432	0.762	0.427	0.775	0.418	0.78	0.415
Monthly household income < ₹2000 ($24)	0.48	0.5	0.46	0.499	0.443	0.497	0.48	0.5	0.487	0.501
Husband characteristics										
Husband's age	25.957	3.548	26.186	3.426	26.306	3.985	26.234	3.534	26.093	3.599
Husband's years of schooling completed	9.898	3.519	9.668	3.465	9.536	3.265	9.874	3.34	9.58	3.525
Husband's occupation:										
Daily wage worker	0.204	0.403	0.211	0.408	0.186	0.39	0.177	0.382	0.177	0.382
Agricultural worker	0.523	0.5	0.562	0.497	0.569	0.496	0.625	0.485	0.617	0.487
Migrant worker	0.118	0.323	0.072	0.259	0.086	0.281	0.069	0.254	0.067	0.25
Public sector employee	0.014	0.116	0.017	0.128	0.014	0.117	0.009	0.095	0.009	0.093
Private sector employee	0.095	0.293	0.089	0.285	0.097	0.296	0.072	0.259	0.058	0.234
Unemployed	0.034	0.181	0.028	0.164	0.017	0.128	0.033	0.179	0.046	0.211
Marriage characteristics										
Number of years married at baseline	3.688	3.175	3.657	3.416	3.586	3.14	3.58	3.165	3.461	2.981
Knew husband before marriage	0.293	0.456	0.23	0.421	0.205	0.404	0.195	0.397	0.243	0.43
Husband lives in the same household for at least 9 months in a year	0.973	0.163	0.97	0.172	0.981	0.138	0.967	0.179	0.954	0.211
Spend less than 6 hours alone with husband in a day	0.779	0.415	0.814	0.389	0.812	0.392	0.793	0.406	0.797	0.403
Husband spends less than 6 hours at home in a day	0.68	0.467	0.568	0.496	0.584	0.493	0.565	0.497	0.548	0.498
Husband discusses work often	0.505	0.501	0.548	0.498	0.515	0.5	0.544	0.499	0.594	0.492
Husband discusses community issues often	0.45	0.498	0.432	0.496	0.413	0.493	0.459	0.499	0.475	0.5
Husband discusses family issues often	0.552	0.498	0.568	0.496	0.551	0.498	0.58	0.494	0.6	0.491
Husband discusses family planning often	0.568	0.496	0.582	0.494	0.576	0.495	0.547	0.499	0.571	0.496

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Fertility history										
Been pregnant before	0.475	0.5	0.438	0.497	0.452	0.498	0.48	0.5	0.452	0.498
Number of previous pregnancies	1.474	0.77	1.418	0.759	1.54	0.891	1.481	0.752	1.487	0.905
Pregnancy ended in a live birth	0.453	0.498	0.429	0.496	0.446	0.498	0.465	0.5	0.435	0.496
Pregnancy ended in a stillbirth	0.027	0.162	0.014	0.117	0.008	0.091	0.03	0.171	0.014	0.12
Pregnancy ended in a miscarriage	0.002	0.047	0.006	0.074	0.003	0.053	0	0	0.006	0.076
Pregnancy ended in an abortion	0.005	0.067	0.003	0.053	0	0	0.003	0.055	0	0
Number of alive children	0.662	0.893	0.609	0.882	0.69	0.962	0.67	0.878	0.641	0.942
Health-seeking during most recent live birth										
Number of antenatal care (ANC) visits completed	1.368	1.628	1.157	0.779	1.118	0.543	1.314	0.986	1.304	1.474
Paid for ANC visit	0.421	0.495	0.472	0.501	0.417	0.495	0.392	0.49	0.396	0.491
Current pregnancy										
Gestational age at baseline (in months)	4.773	1.1	4.593	1.099	4.571	1.136	4.517	1.243	4.545	1.257
Pregnancy is registered with healthcare worker	0.939	0.239	0.895	0.307	0.936	0.245	0.928	0.259	0.922	0.269
Receiveda Mother and Child Protection (MCP) Card	0.799	0.402	0.786	0.41	0.79	0.408	0.819	0.386	0.792	0.406
Gone for any ANC visits	0.856	0.352	0.789	0.408	0.784	0.412	0.775	0.418	0.832	0.375
Number of ANC visits compeleted at baseline	1.428	0.917	1.233	0.904	1.277	0.969	1.186	0.892	1.264	0.878
ANC Knowledge Index										
Correctly identified ANC is important for detecting complications for the mother	0.734	0.442	0.659	0.475	0.668	0.472	0.724	0.448	0.707	0.456
Correctly identified ANC is important for detecting complications for the fetus	0.775	0.418	0.668	0.472	0.676	0.469	0.685	0.465	0.713	0.453
Correctly identified ANC is important for early intervention	0.588	0.493	0.593	0.492	0.618	0.487	0.556	0.498	0.568	0.496
Correctly identified total number of ANC visits recommended	0.793	0.406	0.654	0.476	0.654	0.476	0.655	0.476	0.658	0.475
Know about the Janani Shishu Suraksha (JSS) government benefit	0.791	0.407	0.659	0.475	0.679	0.468	0.7	0.459	0.719	0.45
Know the date of the Village Health and Nutrition Day (VHND)	0.806	0.396	0.734	0.442	0.726	0.447	0.766	0.424	0.765	0.424
Correctly identified riskier pregnancy in first described situation	0.705	0.457	0.726	0.447	0.742	0.438	0.745	0.437	0.667	0.472
Correctly identified riskier pregnancy in second described situation	0.347	0.477	0.374	0.485	0.352	0.478	0.396	0.49	0.386	0.487
Know the cost of an ANC visit	0.928	0.259	0.95	0.218	0.956	0.206	0.943	0.232	0.907	0.291

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Iron and Folic Acid (IFA) Knowledge Index										
Correctly identified the use of IFA supplements for blood volume	0.908	0.29	0.859	0.349	0.884	0.321	0.928	0.259	0.916	0.278
Correctly identified the use of IFA supplements to treat anemia	0.471	0.5	0.443	0.497	0.427	0.495	0.505	0.501	0.519	0.5
Know the risk of untreated anemia	0.93	0.255	0.859	0.349	0.87	0.337	0.817	0.387	0.806	0.396
Know the importance of IFA supplementation	0.635	0.482	0.62	0.486	0.648	0.478	0.634	0.483	0.612	0.488
Permission needed from husband on the following:										
Buy clothing for yourself	0.822	0.383	0.837	0.37	0.861	0.346	0.862	0.346	0.843	0.364
Buy things in the market	0.84	0.367	0.845	0.363	0.864	0.343	0.868	0.339	0.843	0.364
Visit a family planning clinic	0.885	0.319	0.856	0.352	0.861	0.346	0.868	0.339	0.841	0.367
Meet the ASHA worker	0.854	0.354	0.848	0.36	0.861	0.346	0.886	0.318	0.872	0.334
Visit the home of friends by yourself	0.851	0.356	0.892	0.311	0.906	0.292	0.895	0.307	0.936	0.245
Travel a short distance by bus or train or other public transport	0.878	0.327	0.895	0.307	0.906	0.292	0.895	0.307	0.893	0.31
Visit your maternal home	0.903	0.296	0.909	0.289	0.925	0.263	0.898	0.303	0.907	0.291
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.91	0.287	0.903	0.296	0.914	0.281	0.889	0.315	0.907	0.291
Permission needed from the mother-in-law on the following:										
Buy clothing for yourself	0.815	0.388	0.834	0.373	0.85	0.357	0.85	0.358	0.838	0.369
Buy things in the market	0.838	0.369	0.837	0.37	0.861	0.346	0.847	0.361	0.832	0.375
Visit a family planning clinic	0.858	0.349	0.834	0.373	0.853	0.354	0.85	0.358	0.835	0.372
Meet the ASHA worker	0.838	0.369	0.839	0.368	0.853	0.354	0.871	0.336	0.858	0.35
Visit the home of friends by yourself	0.849	0.358	0.881	0.324	0.917	0.276	0.904	0.295	0.919	0.273
Travel a short distance by bus or train or other public transport	0.878	0.327	0.898	0.304	0.914	0.281	0.901	0.299	0.896	0.306
Visit your maternal home	0.896	0.305	0.895	0.307	0.925	0.263	0.898	0.303	0.899	0.302
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.91	0.287	0.898	0.304	0.92	0.272	0.898	0.303	0.901	0.298
Restrictive relationship with mother-in-law										
MIL limits contact with female friends	0.455	0.499	0.596	0.491	0.554	0.498	0.607	0.489	0.594	0.492
MIL limits contact with maternal household members	0.414	0.493	0.579	0.494	0.54	0.499	0.574	0.495	0.577	0.495
Cannot discuss issues relating to your health or women's health in general with MIL	0.225	0.418	0.141	0.349	0.166	0.373	0.15	0.358	0.165	0.372
MIL gets upset if you disagree with her on something	0.426	0.495	0.596	0.491	0.571	0.496	0.601	0.491	0.617	0.487
Feel nervous discussing issues or arguing with MIL	0.439	0.497	0.482	0.5	0.476	0.5	0.453	0.499	0.472	0.5

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Adherence to social norms											
A woman's most important role is to be a good homemaker	0.908	0.29	0.878	0.328	0.873	0.334	0.922	0.269	0.913	0.282	
It is not good for pregnant women to be seen alone in public	0.804	0.397	0.812	0.392	0.845	0.363	0.841	0.366	0.855	0.353	
A woman should tolerate violence to keep the family together	0.579	0.494	0.607	0.489	0.615	0.487	0.61	0.489	0.603	0.49	
A daughter-in-law should not argue with her mother-in-law	0.836	0.371	0.842	0.365	0.87	0.337	0.859	0.349	0.849	0.358	
A daughter-in-law should listen to her mother-in-law regarding maternal health issues	0.923	0.266	0.934	0.249	0.956	0.206	0.928	0.259	0.933	0.25	
Women should be able to travel on their own to health centers	0.09	0.287	0.158	0.365	0.175	0.38	0.093	0.291	0.125	0.331	

This table presents the means and standard deviations of daughters-in-law reported covariates in the control and treatment groups at baseline, prior to any intervention and post-randomization. For binary characteristics, it shows the proportion of daughters-in-law.

Table A.7: Baseline covariate balance of endline sample (DIL responses only) (N=1,844)

	Pairwise differences *p*-values							
	Control vs. T1	Control vs. T2	Control vs.T3	Control vs.T4	T1 vs.T2	T3 vs. T4	T1 vs. T3	T2 vs.T4
Daughter-in-law characteristics								
Age at baseline	0.154	0.507	0.695	0.936	0.84	0.896	0.307	0.635
Years of schooling completed	0.515	0.499	0.28	0.967	0.549	0.298	0.337	0.978
Religion: Hindu	0.524	0.007 ***	0.098 *	0.052 *	0.289	0.554	0.641	0.983
Social category: General	0.393	0.423	0.668	0.506	0.788	0.564	0.742	0.52
Social category: Scheduled caste/ Scheduled tribe	0.021 **	0.601	0.447	0.898	0.039 **	0.479	0.329	0.105
Social category: Other backward castes	0.023 **	0.645	0.431	0.682	0.02 **	0.78	0.24	0.19
Currently working outside the home	0.485	0.216	0.063 *	0.374	0.749	0.596	0.113	0.25
Household characteristics								
Total permanent household members	0.648	0.7	0.506	0.625	0.484	0.559	0.583	0.574
Household head is the mother-in-law	0.992	0.429	0.593	0.663	0.681	0.885	0.93	0.404
Household head is the father-in-law	0.381	0.242	0.328	0.382	0.962	0.521	0.919	0.324
Monthly household income < ₹2000 ($24)	0.768	0.439	0.582	0.495	0.668	0.155	0.517	0.931
Husband characteristics								
Husband's age	0.886	0.786	0.611	0.509	0.649	0.891	0.887	0.803
Husband's years of schooling completed	0.169	0.101	0.328	0.54	0.646	0.324	0.218	0.408
Husband's occupation:								
Daily wage worker	0.245	0.662	0.672	0.593	0.313	0.856	0.756	0.867
Agricultural worker	0.689	0.785	0.133	0.013 **	0.996	0.913	0.717	0.427
Migrant worker	0.077 *	0.651	0.185	0.026 **	0.339	0.796	0.808	0.619
Public sector employee	0.666	0.797	0.761	0.666	0.882	0.837	0.564	0.477
Private sector employee	0.772	0.92	0.403	0.105	0.675	0.348	0.733	0.039 **
Unemployed	0.139	0.101	0.395	0.492	0.512	0.621	0.746	0.037 **
Marriage characteristics								
Number of years married at baseline	0.312	0.998	0.048 **	0.375	0.64	0.895	0.17	0.23
Knew husband before marriage	0.012 **	0.019 **	0.104	0.562	0.802	0.187	0.189	0.056 *
Husband lives in the same household for at least 9 months in a year	0.455	0.11	0.775	0.731	0.11	0.514	0.829	0.025 **
Spend less than 6 hours alone with husband in a day	0.847	0.888	0.371	0.329	0.878	0.534	0.794	0.936
Husband spends less than 6 hours at home in a day	0.355	0.482	0.167	0.089 *	0.059 *	0.531	0.967	0.419
Husband discusses work often	0.158	0.351	0.136	0.03 **	0.287	0.154	0.794	0.297
Husband discusses community issues often	0.445	0.467	0.136	0.034 **	0.923	0.852	0.911	0.455
Husband discusses family issues often	0.345	0.336	0.025 **	0.041 **	0.549	0.933	0.74	0.341
Husband discusses family planning often	0.182	0.15	0.178	0.048 **	0.878	0.608	0.352	0.627

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Fertility history								
Been pregnant before	0.484	0.375	0.933	0.407	0.484	0.327	0.835	0.963
Number of previous pregnancies	0.405	0.108	0.981	0.88	0.202	0.911	0.888	0.355
Pregnancy ended in a live birth	0.084 *	0.175	0.311	0.753	0.631	0.716	0.732	0.05 *
Pregnancy ended in a stillbirth	0.847	0.06 *	0.616	0.235	0.337	0.137	0.45	0.404
Pregnancy ended in a miscarriage	0.29	0.393	0.902	0.825	0.573	0.165	0.159	0.222
Pregnancy ended in an abortion	0.606	0.276	0.801	0.716	0.34	0.338	0.925	.
Number of alive children	0.391	0.064 *	0.765	0.813	0.156	0.743	0.59	0.047 **
Health-seeking during most recent live birth								
Number of antenatal care (ANC) visits completed	0.273	0.224	0.567	0.689	0.99	0.719	0.38	0.319
Paid for ANC visit	0.394	0.719	0.495	0.488	0.101	0.752	0.133	0.708
Current pregnancy								
Gestational age at baseline (in months)	0.49	0.363	0.896	0.339	0.75	0.741	0.886	0.734
Pregnancy is registered with healthcare worker	0.154	0.888	0.894	0.714	0.013 **	0.572	0.012 **	0.649
Receiveda Mother and Child Protection (MCP) Card	0.149	0.097 *	0.364	0.071 *	0.911	0.152	0.486	0.992
Gone for any ANC visits	0.132	0.238	0.104	0.556	0.876	0.026 **	0.677	0.104
Number of ANC visits compeleted at baseline	0.299	0.63	0.089 *	0.797	0.413	0.261	0.89	0.966
ANC Knowledge Index								
Correctly identified ANC is important for detecting complications for the mother	0.978	0.764	0.988	0.895	0.513	0.569	0.192	0.912
Correctly identified ANC is important for detecting complications for the fetus	0.203	0.327	0.125	0.677	0.614	0.341	0.589	0.457
Correctly identified ANC is important for early intervention	0.6	0.45	0.281	0.208	0.072 *	0.869	0.676	0.784
Correctly identified total number of ANC visits recommended	0.02 **	0.011 **	0.003 ***	0.011 **	0.62	0.834	0.889	0.708
Know about the Janani Shishu Suraksha (JSS) government benefit	0.041 **	0.09 *	0.094 *	0.035 **	0.116	0.128	0.589	0.435
Know the date of the Village Health and Nutrition Day (VHND)	0.181	0.12	0.271	0.097 *	0.967	0.991	0.297	0.476
Correctly identified riskier pregnancy in first described situation	0.463	0.232	0.528	0.122	0.659	0.015 **	0.493	0.929
Correctly identified riskier pregnancy in second described situation	0.62	0.858	0.965	0.395	0.657	0.461	0.656	0.94
Know the cost of an ANC visit	0.245	0.202	0.356	0.886	0.944	0.027 **	0.812	0.153

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Iron and Folic Acid (IFA) Knowledge Index								
Correctly identified the use of IFA supplements for blood volume	0.232	0.635	0.562	0.193	0.218	0.476	0.052 *	0.378
Correctly identified the use of IFA supplements to treat anemia	0.507	0.459	0.977	0.375	0.892	0.767	0.234	0.062 *
Know the risk of untreated anemia	0.557	0.435	0.079 *	0.13	0.705	0.406	0.655	0.231
Know the importance of IFA supplementation	0.374	0.191	0.017 **	0.153	0.924	0.876	0.83	0.76
Permission needed from husband on the following:								
Buy clothing for yourself	0.627	0.868	0.679	0.353	0.855	0.959	0.715	0.246
Buy things in the market	0.341	0.437	0.616	0.099 *	0.875	0.572	0.681	0.265
Visit a family planning clinic	0.076 *	0.045 **	0.133	0.016 **	0.413	0.765	0.328	0.236
Meet the ASHA worker	0.226	0.14	0.759	0.601	0.704	0.746	0.987	0.942
Visit the home of friends by yourself	0.794	0.652	0.656	0.072 *	0.991	0.003 ***	0.243	0.1
Travel a short distance by bus or train or other public transport	0.914	0.773	0.672	0.31	0.925	0.389	0.275	0.806
Visit your maternal home	0.758	0.849	0.297	0.977	0.599	0.215	0.117	0.345
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.749	0.722	0.2	0.58	0.907	0.016 **	0.095 *	0.926
Permission needed from the mother-in-law on the following:								
Buy clothing for yourself	0.683	0.434	0.436	0.127	0.613	0.567	0.518	0.285
Buy things in the market	0.245	0.383	0.147	0.052 *	0.886	0.935	0.329	0.228
Visit a family planning clinic	0.328	0.345	0.138	0.298	0.822	0.491	0.469	0.478
Meet the ASHA worker	0.483	0.219	0.271	0.19	0.689	0.57	0.671	0.784
Visit the home of friends by yourself	0.941	0.2	0.485	0.228	0.102	0.219	0.943	0.809
Travel a short distance by bus or train or other public transport	0.815	0.413	0.369	0.042 **	0.632	0.498	0.541	0.639
Visit your maternal home	0.3	0.783	0.271	0.885	0.157	0.217	0.348	0.193
Is your opinion taken into account when purchasing an expensive item like a bicycle or cow	0.533	0.815	0.396	0.92	0.327	0.214	0.299	0.667
Restrictive relationship with mother-in-law								
MIL limits contact with female friends	0.652	0.105	0.745	0.751	0.252	0.945	0.553	0.076 *
MIL limits contact with maternal household members	0.893	0.346	0.67	0.284	0.232	0.478	0.971	0.146
Cannot discuss issues relating to your health or women's health in general with MIL	0.852	0.763	0.36	0.281	0.525	0.452	0.765	0.974
MIL gets upset if you disagree with her on something	0.474	0.606	0.202	0.018 **	0.292	0.843	0.58	0.347
Feel nervous discussing issues or arguing with MIL	0.743	0.291	0.52	0.523	0.747	0.847	0.832	0.68

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Adherence to social norms								
A woman's most important role is to be a good homemaker	0.974	0.908	0.946	0.487	0.656	0.627	0.713	0.626
It is not good for pregnant women to be seen alone in public	0.91	0.301	0.695	0.871	0.215	0.679	0.751	0.98
A woman should tolerate violence to keep the family together	0.523	0.743	0.537	0.488	0.454	0.387	0.23	0.843
A daughter-in-law should not argue with her mother-in-law	0.672	0.432	0.431	0.878	0.723	0.96	0.397	0.308
A daughter-in-law should listen to her mother-in-law regarding maternal health issues	0.658	0.742	0.342	0.844	0.303	0.274	0.321	0.12
Women should be able to travel on their own to health centers	0.152	0.109	0.971	0.87	0.219	0.198	0.633	0.556

The table includes two types of pairwise comparisons: the first set of p-values indicates significant differences between the control group and each treatment group, and the second set compares the treatment groups of interest for the analysis. The displayed p-values result from a regression of the dependent variable on an indicator variable for each treatment group, with the control vs. treatment groups and an indicator variable using the first treatment group specified as the reference category. Strata fixed effects are included, and standard errors are clustered at the village level (not shown here). * denotes statistical significance at 10 pct, ** at 5 pct, and *** at 1 pct level.

Table A.8: Attrition between baseline and midline by treatment arms

	Daughters-in-law (DILs)		Mothers-in-law (MILs)	
	(1)	(2)	(1)	(2)
	Without covariates	With covariates	Without covariates	With covariates
Panel A. Pooled treatments				
Group	-0.055	-0.080 **	-0.041	-0.066 *
	(0.033)	(0.035)	(0.034)	(0.035)
	0.100	0.021	0.231	0.056
Individual	-0.047	-0.064 *	-0.032	-0.049
	(0.036)	(0.038)	(0.035)	(0.037)
	0.193	0.097	0.372	0.190
Control mean	0.205	0.205	0.215	0.215
Observations	2,367	2,189	2,367	2,189
R-squared	0.153	0.180	0.125	0.159
p (Group=Individual)	0.763	0.572	0.738	0.573
Panel B. All treatments				
T1: Individual + Only DIL	-0.069*	-0.080 **	-0.053	-0.066 *
	(0.036)	(0.038)	(0.037)	(0.038)
	0.092	0.037	0.149	0.088
T2: Individual + DIL&MIL	-0.023	-0.038	-0.009	-0.026
	(0.038)	(0.038)	(0.040)	(0.041)
	0.536	0.319	0.825	0.527
T3: Group + Only DIL	-0.060*	-0.075 **	-0.034	-0.045
	(0.036)	(0.036)	(0.040)	(0.040)
	(0.036)	0.036	0.401	0.256
T4: Group + DIL&ML	-0.049	-0.063 *	-0.048	-0.065 *
	(0.035)	(0.035)	(0.036)	(0.037)
	0.155	0.072	0.185	0.079
Control mean	0.205	0.205	0.215	0.215
Observations	2,367	2,189	2,367	2,189
R-squared	0.155	0.202	0.126	0.178
p (T1=T2)	0.621	0.612	0.672	0.568
p (T3=T4)	0.0162	0.0397	0.143	0.199
p (T1=T3)	0.780	0.884	0.602	0.576
p (T2=T4)	0.414	0.418	0.286	0.295

Notes: This table displays the attrition rates of both daughters-in-law and mothers-in-law between baseline and midline. The attrition variable is an indicator that equals 0 if the baseline survey respondent has a corresponding midline survey and 1 if they do not have a midline survey (have attrited from the study). Panel A shows differential attrition for the pooled treatment groups, where the treatment variable is 1 if the participants belong to the group (individual) treatment and 0 if they belong to the control group. Panel B shows the differential attrition for all four treatments, where the treatment variable is 1 if the participants belong to T1-T4 and 0 if they belong to the control group. Each row and column represent a separate regression. Both models (1) and (2) include strata fixed effects, and standard errors clustered at the village level are shown in parentheses. Model (2) includes all baseline covariates specified in Table A.2. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A.9: Attrition between baseline and endline by treatment arms

	Daughters-in-law (DILs)		Mothers-in-law (MILs)	
	(1)	(2)	(1)	(2)
	Without controls	**With controls**	**Without controls**	**With controls**
Panel A. Pooled treatments				
Group	0.024	0.012	0.018	0.011
	(0.031)	(0.031)	(0.030)	(0.031)
	0.429	0.709	0.566	0.715
Individual	0.023	0.023	0.014	0.015
	(0.030)	(0.031)	(0.031)	(0.031)
	0.443	0.453	0.660	0.629
Control mean	0.138	0.138	0.152	0.152
Observations	2,367	2,189	2,367	2,189
R-squared	0.128	0.129	0.114	0.129
p (Group=Individual)	0.966	0.684	0.887	0.894
Panel B. All treatments				
T1: Individual + Only DIL	0.027	0.038	0.022	0.033
	(0.032)	(0.031)	(0.034)	(0.031)
	0.402	0.219	0.510	0.290
T2: Individual + DIL&MIL	0.019	0.021	0.004	0.010
	(0.031)	(0.031)	(0.032)	(0.032)
	0.551	0.491	0.890	0.749
T3: Group + Only DIL	0.028	0.035	0.022	0.033
	(0.031)	(0.030)	(0.031)	(0.030)
	0.368	0.252	0.476	0.283
T4: Group + DIL&ML	0.020	0.024	0.013	0.023
	(0.033)	(0.033)	(0.033)	(0.033)
	0.539	0.469	0.703	0.494
Control mean	0.138	0.138	0.152	0.152
Observations	2,367	2,189	2,367	2,189
R-squared	0.128	0.175	0.114	0.166
p (T1=T2)	0.682	0.602	0.634	0.647
p (T3=T4)	0.691	0.468	0.442	0.339
p (T1=T3)	0.969	0.909	0.992	0.984
p (T2=T4)	0.962	0.940	0.800	0.707

Notes: This table displays the attrition rates of both daughters-in-law and mothers-in-law between baseline and endline. The attrition variable is an indicator that equals 0 if the baseline survey respondent has a corresponding endline survey and 1 if they do not have a endline survey (have attrited from the study) Panel A shows differential attrition for the pooled treatment groups, where the treatment variable is 1 if the participants belong to the group (individual) treatment and 0 if they belong to the control group. Panel B shows the differential attrition for all four treatments, where the treatment variable is 1 if the participants belong to T1-T4 and 0 if they belong to the control group. Each row and column represent a separate regression. Both models (1) and (2) include strata fixed effects, and standard errors clustered at the village level are shown in parentheses. Model (2) includes all baseline covariates specified in Table A.2. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

A.2 Maternal health training scripts

A.2.1 Maternal health script for only pregnant women

Namaste, my name is XXX and I am working on behalf of Noora Health, an NGO working with local hospitals to help women get the right care during pregnancy. As you may remember, a member of our team met you recently.
Can you confirm that you are ¡read out name of respondent¿? Now can you please confirm how far along in the pregnancy you are? months / weeks pregnant?
Today, we would like to provide you with some important information regarding your health during pregnancy. This will take about 15 minutes of your time.
Pregnancy can be a confusing time and there are things you need to do to take care of yourself and your baby. Have you visited the hospital/clinic for ANC check-ups?

- Yes: Very good. Now we will give you more information about this.
- No: Let us go ahead and learn about ANC, and why it is important.

1. **Antenatal care visits**: During pregnancy, it is important to monitor your health in order to detect any health complications and provide treatment. Some pregnant women may undergo problems such as high blood pressure, high blood sugar level, anemia or breech of position of baby. Often, we don't realize these problems are happening. ANC visits help to detect these problems that would have otherwise not been detected and thus protect your health as well as the health of your baby.

   It is important to go for at least 4 ANC visits throughout your pregnancy to make sure your baby is growing healthy. Going for an ANC visit means going to a medical provider like a doctor or the ANM. If the ASHA comes to your home and advises you, it is good for you but that is not an ANC visit as no tests or check ups are performed.

   - Go for at least 1 ANC visit as soon as you know you are pregnant. This is especially important because this is the time to register your pregnancy and get your Mother-Child Protection (MCP) card.
   - The MCP card has many advantages: It allows you and your family to track your pregnancy and keep your records in one place so you have it when you go to deliver.
   - You cannot avail any benefits of government schemes without the MCP card. With the card, you and your baby would be eligible for free delivery, cash assistance, antenatal and postnatal care and many other benefits described in detail on the back of the card.
   - Remember, you can only register the pregnancy and get the MCP card through the ANM.
   - You must go for a total of at least 4 ANC visits throughout your pregnancy.

- ANC visits are provided for free at the Village Health and Nutrition Day (VHND) held at your village every month or for free at your ANM's clinic. You can also get it done on the 9th of every month through the PMMSY.
- You can also go to the district hospital or any clinic at any time to get a check-up done during the pregnancy.
- It is important to remember the Madhya Pradesh (MP) rule: If you go to the hospital for the last two ANC visits, then you can get your MCP number registered with the hospital and get a maximum of Rs. 1400 from the Janani Suraksha Yojana (JSY) scheme when you deliver at the same hospital. Call the 108 number to get a bus to reach the hospital. It is free of cost for women in your situation.

Sometimes it may happen that you are alone at home because your husband has gone for work, and your mother-in-law or other family members are also not at home. And you may be expected to manage the house on your own, at the expense of going to the hospital for a check-up or taking adequate rest. Or you may hear your family members like your mother-in-law or husband asking you not to waste time with these check ups, and stay at home to complete house work. But by not going for the check-ups you risk the chance of harming yourself and your baby. Talk to your MIL and ask her to let you go or to take you herself for the check up.

Do you want me to repeat any of the information I shared about the ANC visit?

2. **Iron folic acid tablets**: Do you know what IFA tablets are?

   Most women are not able to get all the nutrition needed to grow another life. Anemia is one of the most common conditions in pregnancy that can lead to poor health and even death in pregnant women. Your anemia can affect the baby's growth and health. Fortunately, this can be easily controlled through iron and folic acid tablets.

   - Take one tablet of iron and folic acid a day throughout your pregnancy. These will be provided to you for free during your ANC visit. If you miss a dose, it's okay. Take one on the next day.
   - IFA tablets may make you nauseous, make your stools black, or give you an upset stomach. Do not be discouraged. They will ensure your baby doesn't have any birth defects and you don't get anemic. Drink lots of water throughout the day and eat a diet rich in dark leafy vegetables.
   - These are the key things you need to do once you find out you are pregnant. If you do, your baby will grow healthy without any problems.

Lastly, we would like to talk to you about a part of pregnancy that often gets overlooked. At this time, you must be feeling excited, nervous, tired and some physical discomfort.

We advise pregnant women to ask their family for help and support. Your mother-in-law and husband are the people you should rely on during this time. Here are some ways in which you can do this:

- It can be difficult to go for ANC visits alone. Ask your mother-in-law to accompany you to the clinic. We understand that it is sometimes difficult to talk about subjects related to pregnancy and childbirth openly with your family. However, talking to your mother-in-law about the importance of ANC visits like we discussed above, as well as the risks involved if you do not get your health checked regularly will help keep both you and your baby healthy. If your mother-in-law or husband are busy, you can also request a friend of yours to accompany you for an ANC check-up.
- Pregnancy can be tiring especially in the first and last trimester. Try to sleep or rest during the day for an hour at least. Ask your mother-in-law to help with household chores so you can get some time to sleep.
- Many women in your family or among your friends might have already had children. You will receive advice from all these people who care about you on how to take care of your health, what food you should eat, how often you should visit the doctor, etc. In these situations, it is important to remember to always consult your doctor or your ASHA or ANM, and listen to their advice first.

Remember, you are growing a life in you and it is important you prioritize yourself and your baby. That should matter the most to you and your family.

A.2.2 Maternal health script for pregnant women and mothers-in-law

Namaste, my name is XXX and I am working on behalf of Noora Health, an NGO working with local hospitals to help women get the right care during pregnancy. As you may remember, a member of our team met you recently.
Can you confirm that you are ¡read out name of respondent¿? Now Can you please confirm how far along in the pregnancy you are? months / weeks pregnant?
Today, we would like to provide you with some important information regarding your health during pregnancy. This will take about 15 minutes of your time.
Pregnancy can be a confusing time and there are things you need to do to take care of yourself and your baby.
@MIL: Maybe you already know many of the things we might be telling you today. But it is possible that there are better ways to take care of your daughter-in-law's health during pregnancy that might not have existed during your time. That is why we want to talk with both of you together.
@DIL: Have you visited the hospital/clinic for ANC check-ups?

- Yes: Very good. Now we will give you more information about this.
- No: Let us go ahead and learn about ANC, and why it is important.

1. **Antenatal care visits**: During pregnancy, it is important to monitor your health in order to detect any health complications and provide treatment. Some pregnant women may undergo problems such as high blood pressure, high blood sugar level, anemia or breech of position of baby. Often, we don't realize these problems are happening. ANC visits help to detect these problems that would have otherwise not been detected and thus protect your health as well as the health of your baby.

   It is important to go for at least 4 ANC visits throughout your pregnancy to make sure your baby is growing healthy. Going for an ANC visit means going to a medical provider like a doctor or the ANM. If the ASHA comes to your home and advises you, it is good for you but that is not an ANC visit as no tests or check ups are performed.

   - Go for at least 1 ANC visit as soon as you know you are pregnant. This is especially important because this is the time to register your pregnancy and get your Mother-Child Protection (MCP) card.
   - The MCP card has many advantages: It allows you and your family to track your pregnancy and keep your records in one place so you have it when you go to deliver.
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   - You can also go to the district hospital or any clinic at any time to get a check-up done during the pregnancy.
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@DIL: Sometimes it may happen that you are alone at home because your husband has gone for work, and your mother-in-law or other family members are also not at home.

@MIL: Sometimes, your daughter-in-law may be expected to manage the house on her own and complete house work, instead of going to the hospital for a check-up or taking adequate rest.

But by not going for the check-ups you risk the chance of harming yourself and your baby. Talk to each other about when you would like to visit the doctor for a check up, so that you can either go together to the hospital or you can find someone to go with you.

Do you want me to repeat any of the information I shared about the ANC visit?

2. **Iron folic acid tablets**: Do you know what IFA tablets are?

   Most women are not able to get all the nutrition needed to grow another life. Anemia is one of the most common conditions in pregnancy that can lead to poor health and even death in pregnant women. Your anemia can affect the baby's growth and health. Fortunately, this can be easily controlled through iron and folic acid tablets.

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   - These are the key things you need to do once you find out you are pregnant. If you do, your baby will grow healthy without any problems.

Lastly, we would like to talk to you about a part of pregnancy that often gets overlooked. At this time, you must be feeling excited, nervous, tired and some physical discomfort. We advise pregnant women to ask their family for help and support. @DIL: Your mother-in-law and husband are the people you should rely on during this time. @MIL: Your daughter-in-law usually relies on you for help and advice during this time. Thus, it is important that you support her and give her good advice.

- It can be difficult to go for ANC visits alone. @DIL: Ask your mother-in-law to accompany you to the clinic. @MIL: Try to accompany your daughter-in-law to the ANC visit. We understand that it is sometimes difficult to talk about subjects related to pregnancy and childbirth openly with your family. However, talking to each other about the importance of ANC visits like we discussed above, as well as the risks involved if you do not get your health checked regularly will help keep both you

and your baby healthy. @DIL: If your mother-in-law or husband are busy, you can also request a friend of yours to accompany you for an ANC check-up.

- Pregnancy can be tiring especially in the first and last trimester. Try to sleep or rest during the day for an hour at least. @MIL: You can help your daughter-in-law with household chores so she can get some time to sleep.

- Many women in your family or among your friends might have already had children. You will receive advice from all these people who care about you on how to take care of your health, what food you should eat, how often you should visit the doctor, etc. @MIL: You might also have some advice based on your experience during your pregnancy. In these situations, it is important to remember to always consult your doctor or your ASHA or ANM, and listen to their advice first. @MIL: You will also receive advice from many of your friends on how to help your daughter-in-law be healthy during this time. It is normal to not have answers to all of your daughter-in-law's questions, and. It is also normal to not know everything about good health practices during pregnancy. In this case, always remember to consult a doctor or ask your daughter-in-law to consult a doctor.

Remember, you are growing a life in you and it is important you prioritize yourself and your baby. That should matter the most to you and your family.