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Abstract^{*}

We evaluate the effectiveness of sending text messages to pregnant women containing appointment reminders and suggestions for healthy behaviors during pregnancy. Receiving messages had an overall positive effect of 5 percent on the number of prenatal care visits attended. Moreover, for women who live close to their assigned health center and who have higher educational attainment, the intervention positively affected vitamin intake compliance, APGAR scores, and birth weight. Evidence suggests that reminders are more effective among those who are more able to understand the future benefits of preventive care (more educated) and who face lower transaction costs of going to prenatal care checkups (located near health centers). No evidence of geographical spillover effects was found.

JEL classifications: I10; O12

Keywords: WAWARED; Peru; e-Health; Pregnancy; Experimental Design

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1. Introduction

Pregnancy-related complications are still a leading cause of death among women, especially in developing countries (Ronsmans and Campbell, 2011). According to the World Health Organization, every minute at least one woman dies from pregnancy-related issues. This staggering fact explains why maternal and child care became one of the Millennium Development Goals. The aim is to reduce by two thirds the under-five child mortality rate and to improve maternal health by 2015 (Torres et al., 2004; Adam et al., 2005; United Nations, 2012). Latin America and the Caribbean (LAC) shows a neonatal mortality rate equivalent to 9.5 (per 1,000 live births) which is well above the OECD average of 4.3. Within LAC, the Caribbean region shows a relatively larger neonatal mortality rate equivalent to 10.23.¹

Although the American Medical Association indicates that frequent—at least 14—prenatal care visits have positive effects on birth outcomes, it is challenging to disentangle whether such benefits are attributable to a higher number of prenatal care visits. Healthier women are more likely to have better birth outcomes and attend a higher number of prenatal care visits. Thus, the relation between birth outcomes and prenatal care visits could be related to unobserved characteristics that systematically affect birth outcomes and the number of prenatal care visits. Therefore, establishing a link between prenatal care and health outcomes has been difficult in the absence of credible exogenous variation in prenatal care.

According to Joyce (1994), most research on birth outcomes has found a direct association between adequate prenatal care and increased birth weight. However, without a randomized design, it is complicated to determine the degree to which the association is due to the medical intervention and the degree to which it is due to the characteristics of the women receiving the care. In this regard, Evans and Lien (2005) used the exogenous variation in prenatal care provided by a 4-week public transportation strike to identify the effect of prenatal care visits on birth outcomes. Although their results suggest that prenatal care visits improve birth outcomes for at-risk populations, the magnitudes are small.

¹ Source: World Bank, World Development Indicators 2012.

Although early prenatal control visits have the potential to (a) avoid pregnancy-related complications and (b) increase maternal and child care (Kerber et al., 2007; Miller et al., 2003), most pregnant women in the developing world attend only one—or sometimes, none—prenatal care visits during their entire pregnancy. Poor quality services, poor access to these services, and lack of awareness among women explain the low number of prenatal care visits in developing countries. As a first step, governments could use potentially effective interventions to reduce mortality by raising pregnant women’s awareness of the importance of prenatal care visits (Bhutta, 2009; Karolisnki et al., 2010; Nyamtema et al., 2011).

Information and communication technologies (ICTs) such as mobile phone short message services (SMS) could increase awareness about prenatal care visits to improve health outcomes (Krishna et al., 2009). Health related interventions using SMS such as the one conducted by Perron et al. (2010) show how the use of SMS improves patients’ attendance at medical outpatient clinics by means of a reminder system, whereas Cole-Lewis and Kershaw (2010) and Dammert et al. (2014) analyze the effect of SMS on behavioral changes in relation to disease prevention and management. Other studies (Jareethum et al., 2008; Curioso et al., 2010; Tezcan et al., 2011; Cormick et al., 2012) show evidence that most pregnant women have access to SMS and have interest in receiving SMS with educational information regarding pregnancy.

In theory, reminders could mitigate attentional failure and motivate welfare-enhancing changes in intertemporal allocations by providing associations between future opportunities and current choices (Reis, 2006; Karlan et al., 2010). However, there is no robust evidence on the effects of these interventions on birth outcomes. Thus, understanding the role of information and communication technologies on birth outcomes constitutes a great opportunity to improve health outcomes. This is highly relevant for developing countries where the penetration of mobile technologies is very high and the marginal costs of SMS is low, and particularly important in contexts in which scarce public resources must be allocated efficiently.

We implemented a randomized controlled trial to assess the effectiveness of SMS containing prenatal care visits reminders and suggested healthy practices during pregnancy in the Ventanilla district in Peru. Overall, our main findings suggest that SMS increased the number of prenatal care visits by 5 percent and the number

of prenatal care visits attended on time by 10 percent. However, these effects are stronger for more educated women with easier access to health centers. Likewise, the intervention also improved prenatal vitamin intake compliance, APGAR scores and birth weight only within this group. In other words, results show that the intervention was more effective for those more able to understand the future benefits of preventive care (those who are more educated) and with lower transaction costs of using preventive care services (live near the health center). Therefore, the results of this paper present some important implications for future research and policymakers in developing countries. It seems that sending prenatal health care reminders by way of mobile technologies yields positive effects when the basis of human capital and care access are already in place. As such, the results highlight the relevance of investing in the development of human capital and service coverage in order to make technology more useful and observe benefits from it. Overall, our findings imply that technology could be a useful tool for development but it is a complement rather than a substitute for adequate investments in human capital and health services coverage.

The remainder of the paper is organized as follows. Section 2 presents the intervention and experimental design. Section 3 describes the dataset used for the empirical analysis. Section 4 describes the empirical strategy. Section 5 presents results and discussion. Last, Section 6 concludes.

2. Experimental Design

In 2010, the Mobile Citizen Program of the Inter-American Development Bank implemented the Project WAWARED “Connecting for better maternal and child health in Peru” (WAWA is a Quechua word for “baby”). The project involved the development and implementation of an electronic medical record system for maternal health (Curioso et al., 2010), which is linked to a platform that sends SMS to pregnant women tailored to their health profile and gestational age.² SMS include prenatal care checkup reminders, nutritional and motivational messages, and general health-related pregnancy messages. Furthermore, the system includes an Interactive

² See www.wawared.org for a detailed description of the project.

Voice Response system, free of charge to the public, with relevant information for pregnant women.

WAWARED was implemented in the district of Ventanilla, region of Callao, in the central coast of Peru. Women of reproductive age represent almost 30 percent of the entire population of Callao. The project focused on the 16 health centers located in the Ventanilla district.³ Medical care in Ventanilla does not require out-of-pocket expenditures; more than 98 percent of its population qualifies for the government-funded comprehensive health insurance (*Seguro Integral de Salud*).⁴

Despite the absence of out-of-pocket expenses, prenatal care visits are low in Ventanilla. Around 70 percent of pregnant women attend less than nine prenatal care visits. These levels are far below the American Medical Association's recommended level of prenatal control visits of 14. In focus groups conducted during project preparation, most women reported that forgetfulness was one of the main reasons for missed prenatal control visits.

The development and full implementation of the electronic medical records system and SMS interphase ended in January 2012. The system began full and effective application and functionality in March 2012. During the pilot period half of the pregnant women received SMS and the other half did not. The selection of women receiving SMS (treated group) was randomly assigned through an automatic routine embedded in the electronic system and SMS interphase. Note that the randomization was conducted at the individual level but stratified at the health center. Thus, from March 2012 until January 2013, women attending their first prenatal care visit within the first 20 weeks of gestation were randomized to either receive or not receive SMS reminders.⁵

Appointment reminders were sent every Monday and the day previous to the scheduled appointment. Furthermore, every Wednesday and Saturday, other educational messages suggesting healthy food, vitamin intake reminders, and hygiene practices were also sent to the treated group. Last, specific strings of

³ Callao Region comprises 6 districts: Bellavista, Callao (downtown), Carmen de la Legua Reynoso, La Perla, La Punta and Ventanilla. There are 53 health centers located across the whole Callao Region; with 16 of these located in the Ventanilla district (the focus of our intervention).

⁴ For an evaluation of the effects of the *Seguro Integral de Salud* see Bernal et al. (2014)

⁵ We focused on women attending their first pre natal control within the first half of pregnancy in order to allow sufficient time to observe probable behavioral changes along the pregnancy. Women who attended the first control beyond the first 20 weeks of their pregnancy received the SMS string without being randomized into treatment or control groups.

messages related to special conditions such as hyperemesis, being overweight, malnutrition, anemia, smoking, hypertension, diabetes, urinary tract infection, syphilis, HIV, tuberculosis, and alcohol and drug consumption were also developed and delivered only to women manifesting the specific condition.⁶

3. Data and Outcomes of Interest

We use data from the electronic medical records system and face to face interviews with women participating in the pilot period of *WAWARED*. The final sample size consists of 1,162 women from which 576 received SMS reminders (intervention) and 586 did not (control). From the baseline sample (i.e., all women who attended at least one prenatal control before 20 weeks of gestation within the experimental period), the attrition rate was only 6 percent, orthogonal to intervention status and baseline characteristics. In Peru, incoming SMS are free of charge, so households did not incur any cost when receiving text messages.

Baseline information was collected during the first prenatal control. Furthermore, since women were followed until childbirth, outcomes regarding prenatal care visits and health indicators during pregnancy were recorded electronically in the system developed within the project. Other information such as APGAR scores, birth weight, adherence to vitamin intake, and the range and quality of food eaten during pregnancy was collected in face-to-face interviews 2–3 weeks after childbirth. The data also include some demographic (i.e., age, educational attainment, employment status, and marital status) and household characteristics (i.e., income, distance to health center, access to water, electricity, Internet, and kitchen). The advantage of this dataset is that it provides a rich and unique set of variables about household characteristics of pregnant women, and their health practices before, during, and after the intervention.

Table 1 shows that the average age of women in the sample is 26 and their average gestational age at the first prenatal control is 12 weeks. Almost half completed secondary school, 72 percent work in unpaid domestic work and most are single but live with their partner (72 percent). On average, women in the sample have

⁶ See Appendix Table A1 for the full set of messages sent to a typical pregnant woman corresponding to each week of pregnancy. In addition, Appendix Table A2 shows specific strings of messages related to the listed special conditions.

had one previous birth and around one fifth were anemic in the first prenatal control. The average distance to the assigned health center is a little less than a kilometer. Most dwellings have tap water (76 percent), electricity (99 percent), television (98 percent), gas kitchen (100 percent), and at least a digital video disc player (80 percent). By contrast, computer and Internet access is very low (6 and 3 percent, respectively).

For our analysis, we created three sets of dependent variables. Each set corresponds to variables related to prenatal care visits, behavioral outcomes, and birth/maternal health outcomes. The prenatal care visit variables include two indicator variables that are based on the number of prenatal care checkups attended (i.e., at least six and at least nine), and two additional variables defined by the total number of prenatal checkups attended overall during pregnancy and on time.

Behavioral outcomes include self-reported vitamin intake compliance, use of emergency services following adverse symptoms, attending a doctor's appointment following adverse symptoms, and standardized indexes that are based on self-reported information on recommended and non recommended food intake.⁷ For the food-intake related outcomes, we follow Kling et al. (2007) to build categorical summary standardized indexes expressed in standard deviations with respect to the control group as follows:

$$Y^* = \frac{1}{K} \sum_{k=1}^K \frac{Y_k - \mu_k}{\sigma_k} \quad (1)$$

where Y^* is the created index and indicates where the mean of the intervention group is located in the distribution of the control group in terms of standard deviations. For example, the components of the index pertaining to recommended food include K indicators that report consumption of each of the recommended food items included in the SMS strings. Then the index in equation (1) is defined to be the equally weighted average of z scores of its components. The z scores are calculated by subtracting the control group mean of each individual indicator and dividing by the control group standard deviation.

Last, the birth/maternal health outcomes include birth weight, an indicator variable that measures if the weight of the newborn is below 2,500 grams (i.e., low

⁷ Adverse symptoms considered include: abundant vomiting; vaginal bleeding; strong and frequent cramps; pain or itching when urinating; gray, green or bad smell vaginal secretion; foamy urine; fever; swallowing of feet, hands or face; headache; hum; vision difficulties; decreased fetal movements.

birth weight), APGAR score, number of weeks of gestation, weight gain during pregnancy, maternal hemoglobin level at delivery, and whether the mother was anemic at delivery.

4. Empirical Strategy

As previously noted, it is challenging to disentangle whether birth outcomes are attributable to a higher number of prenatal care checkups. Healthier women are more likely to have better birth outcomes and attend a higher number of prenatal care checkups. Thus, there may be some unobserved characteristics systematically influencing both inputs (i.e., prenatal care checkups) and outcomes (i.e., birth outcomes and healthy behavior). As a result, a simple regression that overlooks the sources of endogeneity may overestimate the effect of prenatal care checkups. Getting unbiased estimates depends on the assumption that birth outcomes are uncorrelated with unobserved determinants of the number of prenatal care checkups attended, after controlling for observed determinants. We could use the external variation provided by the randomized controlled trial as an instrument affecting the outcomes of interest through the number of prenatal care checkups attended. However, the SMS also included health tips that likely had a direct effect on other behavioral outcomes. Therefore, the intervention has the potential to affect birth and behavioral outcomes not based solely on the number of prenatal care checkups.

Hence, our goal is to examine whether receiving prenatal checkup reminders and other pregnancy-related information via SMS affects pregnant women's behavior. In particular, we estimate the causal impact of the series of SMS on several health-related variables: (a) prenatal care checkups, (b) behavioral outcomes, and (c) birth and maternal health outcomes. Our identification strategy relies on the exogenous variation provided by the text messages through the randomized controlled trial. This framework allows us to make causal comparisons between treated and control groups.

The validity of our empirical strategy relies on the assumption that both intervention and control groups are statistically equivalent regarding both observable and unobservable characteristics systematically related to the outcomes of interest. To partially test this assumption, we compare observable characteristics

between intervention and control groups collected before intervention implementation. Table 1 presents means and adjusted differences in relevant baseline characteristics across intervention and control groups.⁸ Out of the 36 baseline characteristics, only 3 (student status, pulse, and access to television) are significant at the 10 percent level or lower. Overall, these results show that there are no significant differences across groups in most covariates indicating that the randomization was successful in balancing the baseline covariate mean values between groups. Hence, women in the intervention and control groups appear to be similar in observable characteristics; thus, we can compare outcomes between these groups to identify the causal effect of the intervention.

Having showed that women in intervention and control groups are similar in observed characteristics at baseline, we estimate the following regression model to understand the effect of the intervention on the different outcome variables:

$$Y_{ij} = \alpha_j + \beta T_{ij} + \gamma' X_{ij} + \varepsilon_{ij} \quad (2)$$

where Y_{ij} is the outcome for woman i attending health center j . The parameter α_j is a health center fixed effect. T_{ij} is an indicator for whether the woman is randomly assigned to the intervention. X_{ij} is a vector of baseline characteristics that include age, education, and distance to health center. Last, ε_{ij} is the error term, clustered at the health center level in all specifications.⁹ β is the parameter of interest and measures the average impact of the intervention on the various health-related outcomes.¹⁰

Some aspects of Model (2) deserve discussion. First, the health center fixed effects control nonparametrically for any time invariant observable and unobservable characteristics at the health center level. In addition, given that randomization was stratified at the health center, these fixed effects act as strata fixed effects helping to increase precision in our estimations. Second, we include control variables such as

⁸ We adjust these differences using health center fixed effects in all regressions. Estimated standard errors are also clustered at the health center level.

⁹ We also estimated all of our regressions using robust and bootstrapped estimated standard errors. All results were equivalent and are available upon request.

¹⁰ Note that we estimate intent-to-treat (ITT) effects resulting from a comparison between women assigned to the intervention and control groups respectively. It might be, however, that not all SMS reached women in the intervention group as a result of several reasons like possible phone sharing between different household members. If such situations were present, our estimates would be providing a lower bound of the program's effect. However, no tracking of how many SMS were exactly read by each woman was possible to implement. Therefore, we were not able to scale up our results.

age, education, and distance to health center because they are typically related to health outcomes. However, given our randomized controlled trial design, they are orthogonal to the intervention indicator. Therefore, by including these control variables, we reduce the unexplained variation contained in the error term, thereby increasing precision for inference on the parameter of interest.

5. Results and Discussion

5.1 Overall Effects

The first set of regressions describes the average impact of the intervention on the different sets of health-related outcomes. Table 2 reports the estimation results for specification (2) using the whole sample. Columns 1 and 2 report means of treated and control groups, respectively; column 3 shows the estimated overall intervention effect (the estimated β coefficient).

Note that women receiving SMS show an improvement in the number of prenatal care checkups. Looking at the overall results, the average impact for this set of variables is positive and statistically different from zero. More specifically, receiving SMS increased the likelihood of going to at least six prenatal care checkups by five percentage points, which is a 6 percent increase with respect to the control group mean. Likewise, belonging to the intervention group also increased the likelihood of going to at least 9 (one per month) prenatal care checkups by seven percentage points, which is a 21 percent increase with respect to the control group mean.

Furthermore, while the intervention increased the number of total prenatal care checkups by 5 percent in relation to the control group (0.35/7.48), it also increased the number of prenatal care checkups done on time by 10 percent (0.31/3.1). These results confirm the idea that SMS could be an effective tool for appointment reminders overall. Although SMS also emphasized better health practices for pregnant women, there were no statistically significant effects on behavioral, birth, and maternal health outcomes for the entire sample.

5.2 Heterogeneous Effects

We are also interested in understanding whether there are heterogeneous effects across different groups of women. Pregnant women's behavior could be influenced by factors such as their understanding of the importance of prenatal health care and transaction costs associated with the prenatal visits. As Dupas (2011) shows, the provision of information can influence people's behavior when they are not fully informed about the health situation they face, when the source of information is credible, and when they are able to process the new information. Furthermore, only if the expected benefits of the prenatal health checkups are higher than the transaction costs will women be more likely to attend them. Thus, we consider a variation of the effects of the intervention as a function of observable characteristics such as educational attainment and distance to the health center. These proxies intend to capture differences in awareness of the potential benefits of prenatal care visits (through educational attainment) and their transaction costs (through distance to the health center).

Accordingly, the second set of regressions estimate heterogeneous effects across different groups of women defined by their educational attainment and their distance to the health center separately. Columns 1-4 in Table 3 present estimation results of specification (2) after dividing the sample by educational attainment (i.e., below and above secondary school). Likewise, columns 5-8 in Table 3 display estimation results of specification (2) after dividing the sample by distance to health center (i.e., below and above 500 meters).

As columns 1-4 show, the intervention seems to be more effective among women with secondary or higher education. In this segment, the intervention had a clear effect on the number of prenatal care visits. The highest impact appears on the number of prenatal care checkups done on time (13 percent increase with respect to the control group). In addition, we also find statistically significant effects for vitamin intake. Women exposed to SMS increase their adherence to vitamin intake during the last week of pregnancy by five percentage points (or 7.7 percent with respect to the control group mean) and also increased their vitamin intake compliance during the last month of pregnancy by three percentage points (or four percent with respect to

the control group mean). Finally, we observe a positive effect of 0.14 points on the APGAR score (equivalent to 1.6 percent with respect to the control group mean). Note that there are no statistically significant effects among women with education below secondary school.

Columns 5–8 display regression results for subsamples divided by distance to health center. In this case, we find that SMS had positive effects on the number of prenatal care checkups for both groups. However, we find relatively larger impacts among those who live closer to the health center. In addition, we find that receiving SMS also increased vitamin intake compliance during the last month of pregnancy by three percentage points (or 4 percent with respect to the control group mean), and reduced the consumption of non recommended food by 0.09 standard deviation. Also, there was a positive effect on newborn birth weight equivalent to 87.72 grams (or 2.69 percent with respect to the control group mean).

Evidence presented in Table 3 suggests that SMS serve as an effective reminder for prenatal care checkups in particular for women with more education and who live closer to the health center. Therefore, we also explored heterogeneous effects by educational attainment and distance to the health center combined. We divide the sample into four mutually exclusive groups: (a) women with incomplete secondary school or less who live below 500 meters to the health center, (b) women with incomplete secondary school or less who live above 500 meters to the health center, (c) women with at least secondary school who live below 500 meters to the health center, and (d) women with at least secondary school who live above 500 meters to the health center. The even numbered columns in Table 4 show the average estimated impact within each group.

Along the lines of the results shown in Table 3 we find the same pattern for prenatal care outcomes. The average impact of the intervention seems to be positive and statistically different from zero, with the likelihood of going to at least six prenatal care checkups increasing in almost all groups (except for the group of women with less than secondary level education and who live relatively far from the health center). Regarding prenatal care outcomes, column 6 in Table 4 indicates that the intervention was more effective within the group of women with at least secondary level education and who live closer to the health center. In particular, besides being more likely to go to at least six prenatal care checkups compared to

the control group, receiving SMS also improved the total number of prenatal control visits attended by 0.53 visits (or 7.1 percent with respect to the control group mean). Furthermore, the total number of prenatal control visits done on time increased by 0.58 (or 18.7 percent with respect to the control group mean). Vitamin intake during the last week (month) of pregnancy was also increased by 12 (6) percentage points. For this same group (women with at least secondary level education and who live closer to the health center), receiving SMS affected the weight of newborns by 161.76 grams (or 5.02 percent with respect to the control group mean) and affected the APGAR score by 0.16 point (or 1.8 percent with respect to the control group mean).

Column 9 of Table 4 displays differences in the estimated effects between women with at least secondary education who live relatively close to the health center and women with less than secondary education who live relatively far from the health center. No significant differences are found regarding prenatal care attendance. However, significant differences are found regarding vitamin intake compliance, birthweight and APGAR score. This confirms that our intervention differentially affected women with relatively higher education and with lower transaction costs of prenatal care attendance.

The evidence presented suggests that short message services (SMS) serve as a mechanism that encourages pregnant women to attend prenatal care visits. Furthermore, when assessing whether impacts are heterogeneous across groups of women, differentiating by their educational attainment and distance to health center, we find that impacts are higher in women with more education and at a closer distance to the health center. In contrast, we do not find these effects among women with less than secondary level education and who are further away from the health center. We interpret these results as evidence that inexpensive interventions, such as SMS, are effective when a minimum level of education and health care accessibility have been previously achieved.

5.3 Spillover Effects

Another relevant question relates to the potential spillover effects of the intervention. Women in the control group can learn from women in the intervention group about the importance of prenatal checkups, and therefore adopt healthy behaviors during their pregnancy. If this were the case, results shown in Tables 2-4

would be lower bound estimates of the intervention effects. Observing behaviors of and interacting with women in the intervention group could improve the information about the perceived benefits of prenatal care (Bandiera & Rasul, 2006). Furthermore, the homogeneity of women in the intervention and control groups increases the likelihood of this social learning.

Following Conley and Udry (2010), we use data on geographical location to define each woman's information neighborhood. An information neighborhood is the set of other women from whom a woman might learn. Our empirical strategy tests whether women in the control group adjust their prenatal care and health practices when they have close proximity to women in the intervention group. In other words, we measure whether women in the control group conform to the behavior of their neighbors in the intervention group. As such, we attribute behavioral changes to social learning by identifying whether women in the control group align their behavior to women in the intervention group.

The challenge of identifying spillover effects relies on the definition of the set of neighbors from which a woman could learn. To do so, we collected the GIS coordinates corresponding to the household of each woman in our sample. Then, we defined each woman's neighborhood as the mass of women living within a 25-meter radius.¹¹ Within this framework, we identified spillover effects through the estimation of the following regression model (restricted to the sample of women in the control group):

$$Y_{ij} = \alpha_j + \beta_2 T_{2ij} + \lambda \text{Density}_{ij} + \gamma' X_{ij} + \varepsilon_{ij} \quad (3)$$

where Y_{ij} is the outcome for woman i attending health center j , and α_j is a health center fixed effect. T_{2ij} is an indicator for whether woman i has at least one treated woman within her neighborhood. Density_{ij} is the total number of women (regardless of intervention status) that belong to the neighborhood of woman i , and X_{ij} is a vector of baseline characteristics that include age, education, and distance to health center. Last, ε_{ij} is the error term, clustered at the health center level in all specifications.

¹¹ We also performed the analysis considering 50, 75, and 100 meter thresholds. All results were equivalent and are available upon request.

Because intervention was randomly assigned, conditional on the density of women living within each neighborhood, β_2 identifies geographical spillover effects of the intervention on the various outcomes. In other words, β_2 measures the effect on the various health-related outcomes of having at least one treated woman within woman's i neighborhood. The validity of this strategy requires that, conditional on density, control women living close to treated women should be observationally equivalent at baseline when compared with control women living far from treated women. Appendix Table A3 shows that these groups were well balanced at baseline (out of 36 measured characteristics, only 3 were significant at the 10 percent level or lower).

Table 5 shows estimated spillover effects. The evidence suggests null general spillover effects on the outcomes of interest. Therefore, it appears that social learning flowing from treated to control women living close by did not generate discernible impacts. These findings confirm that the main effects of the intervention were not biased as a result of the potential presence of social learning flowing from treated to control women.

6. Conclusions and Policy Implications

This paper examined the role of SMS as a reminder mechanism for prenatal care checkups and as a vehicle for promoting healthy practices during pregnancy (adherence to vitamin-intake and eating habits). We did this by implementing a randomized controlled trial in the district of Ventanilla, in the region of Callao, Peru. Our main findings suggest that SMS increased the number of prenatal care checkups attended by 5 percent, and the number of prenatal checkups attended on time by 10 percent. Furthermore, they increase the likelihood of going to at least nine checkups (one per month) by 21 percent.

We also found heterogeneous effects of the intervention across groups of women defined by educational attainment and distance to the health center. Impacts seem to be concentrated among more educated women with easier access to the health center. Although all groups showed impacts on the number of prenatal care checkups, women with secondary education and living within 500 meters of the health center also increased healthy behaviors such as adherence to vitamin-intake.

Furthermore, birth weight and APGAR scores were positively affected only within this segment. Thus, results suggest that the intervention was more effective within groups more able to understand the future benefits of preventive care (more educated) and with lower transaction costs of attending preventive care (living closer to health centers). Last, no evidence of spillover effects were found, suggesting that estimated effects do not suffer from potential downward biases that would exist in the presence of spillovers flowing from treated to control women.

The main limitation of our analysis becomes apparent in the inability to use the intervention as an instrument for the number of prenatal care visits. The inclusion of health tips in the SMS string limits the use of the intervention as an instrument since it does not affect the outcomes of interest, exclusively, through the number of prenatal care visits. Nonetheless, the results of this paper pose some important questions for future research and policymaking about the role of ICT in increasing awareness about prenatal care visits to improve health outcomes. In particular, because the intervention seems to be more effective in more educated women who live closer to the health center, the results highlight the relevance of investing in the development of human capital and service coverage in order to make technology more useful and observe benefits from it.

This suggests that technology could be a useful tool for development but it is a complement rather than a substitute for adequate investments in human capital and health services coverage. Therefore, it could be the case that relatively less educated women located at a further distance from the health center might be helped by facilitating access and providing education about preventive care. Thus, SMS need to be complemented with other institutional arrangements aiming at increasing understanding and access to preventive care to more disadvantaged groups of women.

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Table 1. Baseline Balance

	Treated	Control	Adjusted difference	Observations
	(1)	(2)	(3)	(4)
<i>Women Sociodemographic Characteristics</i>				
Age	25.75	25.58	0.17 (0.32)	1,162
Born in Lima	0.43	0.45	-0.03 (0.03)	1,100
Education				
Incomplete secondary or lower	0.33	0.38	-0.05 (0.03)	1,162
Complete secondary	0.48	0.44	0.03 (0.03)	1,162
Incomplete tertiary	0.09	0.09	0.01 (0.01)	1,162
Complete tertiary	0.09	0.09	0.00 (0.02)	1,162
Occupation				
Unpaid domestic worker	0.72	0.69	0.02 (0.03)	1,156
Paid domestic worker	0.08	0.09	-0.00 (0.01)	1,156
Paid nondomestic work	0.09	0.08	0.01 (0.02)	1,156
Student	0.06	0.10	-0.03** (0.01)	1,156
Civil status				
Single	0.17	0.17	-0.00 (0.02)	1,162
Married	0.11	0.14	-0.03 (0.03)	1,162
Not married but living with partner	0.72	0.69	0.03 (0.03)	1,162
Pre-pregnancy weight (kilograms)	58.32	58.42	-0.09 (0.50)	1,159
Height (meters)	1.53	1.53	-0.00 (0.00)	1,162
<i>Women physical signals (1st control)</i>				
Weeks of pregnancy	12.01	11.73	0.32 (0.22)	1,154
Number of prior births	1.02	0.93	0.08 (0.05)	1,162
Temperature (Celsius)	36.55	36.55	0.01 (0.02)	1,156
Respiratory frequency	18.98	18.92	0.06 (0.14)	1,156
Pulse	76.29	75.87	0.51** (0.20)	1,156
Systolic blood pressure	96.96	97.40	-0.46 (0.45)	1,156
Diastolic blood pressure	60.94	60.91	-0.01 (0.26)	1,156

Hemoglobin level	11.83	11.76	0.09 (0.06)	936
Anemic (hemoglobin level <11)	0.22	0.24	-0.02 (0.02)	936
<i>Household Characteristics</i>				
Total household income (PEN)	737.39	720.75	12.81 (11.77)	1,153
Distance to health center (meters)	929.65	895.12	34.71 (47.76)	1,162
Tap water	0.76	0.76	-0.01 (0.02)	1,161
Electricity	0.99	0.97	0.01 (0.01)	1,161
Internet	0.03	0.03	0.00 (0.01)	1,160
Television	0.99	0.98	0.01* (0.01)	1,160
Refrigerator	0.59	0.63	-0.04 (0.03)	1,160
Electric kitchen	0.01	0.01	0.01 (0.00)	1,160
Gas kitchen	1.00	0.98	0.02 (0.03)	1,160
Kerosene kitchen	0.01	0.02	-0.00 (0.01)	1,159
Digital video disc player	0.80	0.77	0.03 (0.02)	1,161
Computer	0.06	0.06	0.00 (0.01)	1,160

Notes: This table presents estimated differences between treated and control women from whom valid information on both number of prenatal controls attended during pregnancy and newborn's birth weight were obtained. Baseline data was collected during the first prenatal control. Columns 1 and 2 present means; column 3 presents estimated coefficients and standard errors on a treatment indicator from ordinary least square regressions with health center fixed-effects. Estimated standard errors, reported in parentheses, are clustered at the health center level. Significance at the 1, 5, and 10 percent levels is indicated by ***, ** and *, respectively.

Table 2. Overall Treatment Effects

	Treated	Control	Treatment effect	Observations
	(1)	(2)	(3)	(4)
<i>Prenatal care</i>				
Attend ≥ 6 prenatal controls	0.87	0.82	0.05** (0.02)	1,162
Attend ≥ 9 prenatal controls	0.40	0.33	0.07*** (0.02)	1,162
Total prenatal controls	7.82	7.48	0.35*** (0.12)	1,162
Total prenatal controls on time	3.41	3.10	0.31** (0.14)	1,157
<i>Behavioral outcomes</i>				
Took vitamins on time (last week)	0.72	0.69	0.03 (0.03)	1,115
Overall vitamin compliance (last month)	0.78	0.77	0.01 (0.01)	1,121
Attended emergency (given adverse symptoms)	0.36	0.34	0.03 (0.04)	675
Visited doctor (given adverse symptoms)	0.79	0.81	-0.02 (0.02)	675
Recommended food (in standard deviations)	0.02	0.00	0.03 (0.02)	1,162
Not recommended food (in standard deviations)	-0.04	0.00	-0.04 (0.03)	1,162
<i>Birth and maternal health outcomes</i>				
Birth weight (grams)	3,343.87	3,316.29	31.11 (28.07)	1,162
Low birth weight (<2500)	0.05	0.05	-0.00 (0.01)	1,162
APGAR score (1 minute)	8.82	8.76	0.07 (0.06)	1,144
Weeks of gestation	38.89	38.89	0.00 (0.09)	1,161
Weight gain during pregnancy (kilograms)	10.45	10.29	0.14 (0.27)	1,154
Hemoglobin level	11.73	11.64	0.08 (0.08)	936
Anemic (hemoglobin level <11)	0.21	0.22	-0.00 (0.03)	936

Notes: This table presents estimated effects of the intervention on the main outcomes of interest. Columns 1 and 2 present means; column 3 presents estimated coefficients and standard errors on the treatment indicator from ordinary least square regressions that control for health center fixed effects, education level and age of the woman, and distance between the residence and the health center. Estimated standard errors, reported in parentheses, are clustered at the health center level. Significance at the 1, 5, and 10 percent levels is indicated by ***, ** and *, respectively.

Table 3. Heterogeneous Effects: Education and Distance to Health Center Separately Assessed

	Effects, by education				Effects, by distance to health center			
	Below Secondary		Secondary or Higher		Below 500 meters		Above 500 meters	
	Control group	Treatment	Control group	Treatment	Control group	Treatment	Control group	Treatment
	mean	effect	mean	effect	mean	effect	mean	effect
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Prenatal care</i>								
Attend ≥ 6 prenatal controls	0.83	0.02 (0.04)	0.82	0.06*** (0.02)	0.80	0.09*** (0.02)	0.83	0.03 (0.03)
Attend ≥ 9 prenatal controls	0.30	0.04 (0.05)	0.35	0.07** (0.03)	0.33	0.07 (0.05)	0.33	0.08** (0.03)
Total prenatal controls	7.41	0.24 (0.21)	7.52	0.40*** (0.11)	7.43	0.53*** (0.16)	7.50	0.32* (0.18)
Total prenatal controls on time	3.19	0.14 (0.30)	3.05	0.40** (0.14)	3.13	0.42* (0.20)	3.09	0.26 (0.21)
<i>Behavioral outcomes</i>								
Took vitamins on time (last week)	0.75	-0.03 (0.07)	0.65	0.05* (0.03)	0.74	0.03 (0.03)	0.67	0.02 (0.04)
Overall vitamin compliance (last month)	0.79	-0.02 (0.01)	0.76	0.03** (0.01)	0.76	0.03** (0.01)	0.77	0.01 (0.01)
Attended emergency (given adverse symptoms)	0.31	0.05 (0.07)	0.35	0.01 (0.06)	0.34	0.02 (0.05)	0.33	0.03 (0.04)
Visited doctor (given adverse symptoms)	0.80	-0.03 (0.06)	0.81	-0.01 (0.03)	0.79	-0.03 (0.05)	0.81	-0.02 (0.03)
Recommended food (in standard deviations)	0.01	0.03 (0.02)	-0.00	0.01 (0.02)	0.03	0.01 (0.05)	-0.02	0.03 (0.03)
Not recommended food (in standard deviations)	0.05	-0.10 (0.07)	-0.03	-0.00 (0.03)	0.05	-0.09* (0.05)	-0.03	-0.01 (0.03)
<i>Birth and maternal health outcomes</i>								
Birth weight (grams)	3,350.51	-20.15 (54.02)	3,295.12	56.74 (35.13)	3,266.95	87.72* (44.07)	3,341.09	8.24 (46.17)
Low birth weight (<2500)	0.04	0.01 (0.02)	0.05	-0.01 (0.02)	0.06	-0.02 (0.02)	0.04	0.01 (0.02)
APGAR score (1 minute)	8.80	-0.06 (0.10)	8.73	0.14** (0.06)	8.69	0.13 (0.09)	8.79	0.04 (0.06)
Weeks of gestation	39.01	-0.11 (0.16)	38.81	0.07 (0.10)	38.83	0.16 (0.19)	38.92	-0.08 (0.13)
Weight gain during pregnancy (kilograms)	9.81	-0.30 (0.44)	10.58	0.41 (0.33)	10.01	-0.10 (0.54)	10.42	0.46 (0.36)
Hemoglobin level	11.59	0.18 (0.13)	11.67	0.03 (0.09)	11.81	-0.10 (0.12)	11.56	0.14 (0.11)
Anemic (hemoglobin level <11)	0.21	0.02 (0.06)	0.23	-0.02 (0.03)	0.16	0.05 (0.06)	0.25	-0.02 (0.03)
Observations	224	414	362	748	196	405	390	757

Notes: This table presents estimated effects of the intervention on the main outcomes of interest by different subgroups separately defined by educational level and distance to the health center. Columns 1, 3, 5, and 7 present control group means. Columns 2, 4, 6, and 8 present estimated coefficients and standard errors on the treatment indicator from ordinary least square regressions that control for health center fixed effects, education level and age of the woman, and distance between the residence and the health center. Estimated standard errors, reported in parentheses, are clustered at the health center level. Significance at the 1, 5, and 10 percent levels is indicated by ***, ** and *, respectively.

Table 4. Heterogeneous Effects: Education and Distance to Health Center Jointly Assessed

	Below Secondary				Secondary or Higher				Difference (6) - (4) (9)
	Below 500 meters		Above 500 meters		Below 500 meters		Above 500 meters		
	Control group	Treatment	Control group	Treatment	Control group	Treatment	Control group	Treatment	
	mean	effect	mean	effect	mean	effect	mean	effect	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
<i>Prenatal care</i>									
Attend ≥6 prenatal controls	0.80	0.09* (0.05)	0.85	-0.01 (0.05)	0.80	0.08** (0.03)	0.83	0.05** (0.02)	0.09 (0.07)
Attend ≥9 prenatal controls	0.32	0.04 (0.05)	0.30	0.05 (0.06)	0.34	0.08 (0.05)	0.35	0.08** (0.03)	0.02 (0.09)
Total prenatal controls	7.38	0.33 (0.23)	7.42	0.20 (0.31)	7.47	0.53** (0.19)	7.55	0.36** (0.16)	0.33 (0.37)
Total prenatal controls on time	3.17	0.16 (0.28)	3.20	0.13 (0.40)	3.10	0.58* (0.28)	3.03	0.31 (0.22)	0.45 (0.49)
<i>Behavioral outcomes</i>									
Took vitamins on time (last week)	0.82	-0.11* (0.06)	0.71	0.03 (0.09)	0.68	0.12** (0.04)	0.64	0.02 (0.03)	0.09 (0.11)
Overall vitamin compliance (last month)	0.80	-0.04* (0.02)	0.78	-0.01 (0.02)	0.73	0.06*** (0.02)	0.77	0.01 (0.01)	0.07** (0.03)
Attended emergency (given adverse symptoms)	0.27	0.02 (0.12)	0.33	0.07 (0.07)	0.39	0.01 (0.06)	0.34	0.02 (0.07)	-0.06 (0.09)
Visited doctor (given adverse symptoms)	0.77	-0.03 (0.10)	0.83	-0.02 (0.06)	0.81	-0.01 (0.07)	0.81	-0.02 (0.04)	0.00 (0.09)
Recommended food (in standard deviations)	0.03	0.05 (0.05)	-0.01	0.04 (0.03)	0.03	-0.00 (0.05)	-0.02	0.02 (0.03)	-0.05 (0.06)
Not recommended food (in standard deviations)	0.11	-0.17*** (0.05)	0.01	-0.05 (0.09)	0.01	-0.03 (0.06)	-0.05	0.01 (0.03)	0.02 (0.12)
<i>Birth and maternal health outcomes</i>									
Birth weight (grams)	3,330.23	-48.06 (95.04)	3,362.23	-4.86 (66.25)	3,221.44	161.76*** (46.28)	3,328.98	9.73 (55.04)	166.6* (93.68)
Low birth weight (<2500)	0.06	-0.02 (0.03)	0.03	0.03 (0.03)	0.06	-0.03 (0.03)	0.05	0.01 (0.02)	-0.05 (0.05)
APGAR score (1 minute)	8.66	0.04 (0.17)	8.89	-0.14 (0.09)	8.72	0.16* (0.08)	8.73	0.14* (0.08)	0.30** (0.11)
Weeks of gestation	38.83	0.12 (0.25)	39.11	-0.28 (0.25)	38.83	0.16 (0.23)	38.81	0.03 (0.16)	0.44 (0.34)
Weight gain during pregnancy (kilograms)	10.38	-1.43** (0.58)	9.49	0.33 (0.53)	9.75	0.37 (0.60)	10.96	0.46 (0.40)	0.04 (0.96)
Hemoglobin level	11.75	0.02 (0.24)	11.50	0.27 (0.19)	11.85	-0.15 (0.15)	11.59	0.10 (0.11)	-0.42** (0.19)
Anemic (hemoglobin level <11)	0.14	0.12 (0.10)	0.25	-0.03 (0.08)	0.18	0.02 (0.05)	0.25	-0.03 (0.03)	0.05 (0.08)
Observations	82	151	142	263	114	254	248	494	

Notes: This table presents estimated effects of the intervention on the main outcomes of interest by different subgroups jointly defined by educational level and distance to the health center. Columns 1, 3, 5, and 7 present control group means. Columns 2, 4, 6, and 8 present estimated coefficients and standard errors on the treatment indicator from ordinary least square regressions that control for health center fixed effects, education level and age of the woman, and distance between the residence and the health center. Estimated standard errors, reported in parentheses, are clustered at the health center level. Significance at the 1, 5, and 10 percent levels is indicated by ***, ** and *, respectively.

Table 5. Spillover Effects

	Control women close to treated women (1)	Control women far from treated women (2)	Spillover effect (3)	Observations (4)
<i>Prenatal care</i>				
Attend ≥ 6 prenatal controls	0.76	0.83	-0.01 (0.10)	586
Attend ≥ 9 prenatal controls	0.32	0.33	-0.16* (0.09)	586
Total prenatal controls	7.31	7.50	-0.36 (0.47)	586
Total prenatal controls on time	3.39	3.06	-0.31 (0.45)	582
<i>Behavioral outcomes</i>				
Took vitamins on time (last week)	0.85	0.67	0.05 (0.05)	563
Overall vitamin compliance (last month)	0.79	0.77	0.01 (0.03)	566
Attended emergency (given adverse symptoms)	0.36	0.33	0.14 (0.12)	341
Visited doctor (given adverse symptoms)	0.74	0.82	-0.00 (0.11)	341
Recommended food (in standard deviations)	0.04	-0.01	-0.02 (0.12)	586
Not recommended food (in standard deviations)	0.04	-0.01	-0.01 (0.11)	586
<i>Birth and maternal health outcomes</i>				
Birthweight (grams)	3,414.47	3,302.10	129.37 (122.88)	586
Low birth weight (<2500)	0.03	0.05	-0.02 (0.03)	586
APGAR score (1 minute)	8.85	8.74	0.23* (0.13)	577
Weeks of gestation	39.16	38.85	0.01 (0.37)	585
Weight gain during pregnancy (kilograms)	10.26	10.29	0.39 (1.59)	583
Hemoglobin level	11.77	11.62	-0.23 (0.20)	476
Anemic (hemoglobin level <11)	0.11	0.24	-0.01 (0.09)	476

Notes: This table presents estimated spillover effects of the intervention on the main outcomes of interest. Only control women are included in the analysis. Columns 1 and 2 present means; column 3 presents estimated coefficients and standard errors on an indicator for control women living within a radius of 25 meters from at least one treated woman. Ordinary least square regressions control for health center fixed effects, education level and age of the woman, and distance between the residence and the health center, and the number of pregnant women living within the 25-meter radius. Estimated standard errors, reported in parentheses, are clustered at the health center level. Significance at the 1, 5, and 10 percent levels is indicated by ***, ** and *, respectively.

Table A1. General Messages: Delivered to all the Treatment Group

ID	Week	Day	Area	Message
1	At enrolment			Bienvenida a WawaRed: Un programa que te brindara consejos e informacion importante para un embarazo saludable
2	5	Lun	Mot	Tu salud es importante! Ven a tu control. Un mensaje de WawaRed
3	5	Mier	Edu	Evita acercarte a ninos que tengan sarampion o rubeola, porque pueden contagiar a tu bebe. Un mensaje de WawaRed
4	5	Sab	Nutri	Consume comidas a vapor o al horno en vez de frituras. Es mas saludable!. Un mensaje de WawaRed
5	6	Lun		Tu bebe es importante! Ven a tu control. Un mensaje de WawaRed
6	6	Mier	Hipermesis	Si tienes nauseas y vomitos come algo seco y en poca cantidad, como un trozo de pan o galletas de soda. Un mensaje de WawaRed
7	6	Sab	Nutri	Consume siempre tu desayuno, almuerzo y cena, ademas de un refrigerio como una fruta. Un mensaje de WawaRed
8	7	Lun		Mami ponle ganas! Ven a tu control. Un mensaje de WawaRed
9	7	Mier	Alarma	Si presentas vomitos abundantes o frecuentes acude a tu centro de salud. Un mensaje de WawaRed
10	7	Sab	Nutri	El desayuno es el alimento mas importante del dia, puedes tomar una taza de leche o yogurt y frutas. Un mensaje de WawaRed
11	8	Lun		Cuida tu salud! Ven a tu control. Un mensaje de WawaRed
12	8	Mier	Edu	Lavate las manos antes de preparar tus alimentos y almacenalos en lugares frescos. Un mensaje de WawaRed
13	8	Sab	Nutri	Son importantes los alimentos con acido folico durante el embarazo: carnes rojas, visceras, verduras de hojas verdes y cereales
14	9	Lun		Cuida a tu bebe! Ven a tu control. Un mensaje de WawaRed
15	9	Mier	Alarma	Si tienes colicos fuertes y frecuentes o sangrado, acude de inmediato a tu centro de salud. Un mensaje de WawaRed
16	9	Sab	Nutri	Toma agua en vez de gaseosas o jugos envasados o de sobre. Es mas saludable. Un mensaje de WawaRed
17	10	Lun		Mami, Animo! Ven a tu control
18	10	Mier	Edu	Di que estas embarazada antes que te den alguna medicina
19	10	Sab	Nutri	Recuerda que es importante incluir en tus comidas al menos una porcion de cualquier carne o viscera, huevo o queso al dia
20	11	Lun		Tu y tu bebe lo necesitan! Ven a tu control. Un mensaje de WawaRed
21	11	Mier	Hipermesis	Si tienes nauseas o vomitos evita las comidas grasosas. Un mensaje de WawaRed
22	11	Sab	Edu	Para evitar que te salgan manchas en la cara usa protector solar antes, durante y despues de salir al sol. Un mensaje de WawaRed
23	12	Lun		Ven a tu control: sabemos que es tempranito, pero tu bebe estara sanito. Un mensaje de WawaRed
24	12	Mier	Vacu	Vacunate, acude a tu centro de salud para saber cuales necesitas. Un mensaje de WawaRed
25	12	Sab	Motiv	Lo estas haciendo muy bien!, sigue adelante y evita la comida chatarra (dulces, bebidas gaseosas, chisitos o cosas empaquetadas)
26	13	Lun		Tu eres muy importante para tu bebe! Ven a tu control. Un mensaje de WawaRed
27	13	Mier	Alarma	Si presenta sangrado vaginal durante el embarazo acude a emergencia del centro de salud mas cercano. Un mensaje de WawaRed
28	13	Sab	Nutri	Consume frutas y verduras, como tomate y zanahoria porque son fuentes de vitamina A, C y fibra. Un mensaje de WawaRed
29	14	Lun		Tu bebe quiere que vengas! Ven a tu control. Un mensaje de WawaRed
30	14	Mier	VIH	Hacerte la prueba del VIH te da ventajas. Si aun no te la has hecho solicitala en tu centro de salud. Un mensaje de WawaRed
31	14	Sab	Nutri	Tu bebe necesita que te alimentes bien, consume frutas y verduras de diversos colores.Un mensaje de WawaRed

32	15	Lun		Mami animo! No faltes a tu control. Un mensaje de WawaRed
33	15	Mier	Violen	Tu mereces ser valorada. Si sufres algun tipo de maltrato fisico o psicologico llama gratis desde cualquier telefono al numero 100
34	15	Sab	Act. Fisica	Mantente activa, camina 30 minutos al dia es bueno para tu salud fisica y emocional. Un mensaje de WawaRed
35	16	Lun		Ven a tu control, quiza te puedas cansar, pero es lo mejor para ti. Un mensaje de WawaRed
36	16	Mier	Inf. Uri	Para prevenir las infecciones urinarias toma abundante agua todos los dias y no te aguantes la orina. Un mensaje de WawaRed
37	16	Sab	Nutri	Es mejor tomar tus vitaminas con limonada o jugo de naranaja o algun otro citrico. Un mensaje de WawaRed
38	17	Lun		Tu bebe te lo agradecera! Ven a tu control. Un mensaje de WawaRed
39	17	Mier	Sifilis	Hacerte la prueba de Sifilis te da ventajas. Si aun no te la has hecho solicitala en tu centro de salud. Un mensaje de WawaRed
40	17	Sab	Vacu	Vacunate contra el tetano es importante para ti y para tu bebe, si no lo has hecho solicitala en tu centro de salud. Un mensaje de WawaRed
41	18	Lun		Es lo mejor para tu salud! Ven a tu control. Un mensaje de WawaRed
42	18	Mier	Alarma	Es normal que orines con frecuencia pero si tienes dolor, comezon o ardor cuando orinas debes de acudir a tu centro de salud
43	18	Sab	Nutri	Consume mucho hierro para tener suficiente energia y prevenir la anemia, lo encuentras en: Sangrecita, higado, bazo, bofe y carnes rojas
44	19	Lun		Ponle energias! Ven a tu control
45	19	Mier	Higiene	Un buen aseo es importante. Banate seguido y cepillate los dientes a diario. Un mensaje de WawaRed
46	19	Sab	Nutri	Mami toma tus vitaminas porque es importante para tu bebe. Un mensaje de WawaRed
47	20	Lun		Ven a tu control, quiza te puedas cansar, pero es lo mejor para tu bebe. Un mensaje de WawaRed
48	20	Mier	Inf. Uri	Para prevenir las infecciones urinarias, orina cuando tenga ganas y no te aguantes la orina. Un mensaje de WawaRed
49	20	Sab	Motiv	Sigue adelante, ya estas en la mitad de tu embarazo, y tu bebe esta grandecito. Un mensaje de WawaRed
50	21	Lun		Tu bebe quiere nacer bien! Ven a tu control. Un mensaje de WawaRed
51	21	Mier	Constipasio n	Si te cuesta mucho ir al bano toma agua,come frutas,alimentos con fibra como la yuca y salvado de trigo. NO tomes laxantes
52	21	Sab	Nutri	Tu alimentacion y el ejercicio son importantes, consulta en tu centro de salud tu peso ideal. Un mensaje de WawaRed
53	22	Lun		Cuidate y cuida a tu bebe! Ven a tu control. Un mensaje de WawaRed
54	22	Mier	Alarma	El flujo vaginal transparente o blanquesino es normal. Pero si es gris, verde o grumoso o huele mal acude a tu centro de salud
55	22	Sab	Edu	Si alguien fuma cerca de ti pidale que apague su cigarro o que se vaya de la habitacion, no te acerques al humo. Un mensaje de WawaRed
56	23	Lun		Ven a tu control, muchas veces tienes que esperar pero es lo mejor para tu bebe. Un mensaje de WawaRed
57	23	Mier	Alarma	Si tienes orinas espumosas debes de acudir lo mas pronto a tu centro de salud. Un mensaje de WawaRed
58	23	Sab	Motiv	Sentirte bien es importante para ti y para tu bebe. Habla con las personas importantes para ti o pide consejos en tu centro de salud
59	24	Lun		Tu bebe quiere nacer sano! Ven a tu control. Un mensaje de WawaRed
60	24	Mier	Edu	Evita las duchas vaginales ya que pueden causar inflamacion vaginal. Un mensaje de WawaRed
61	24	Sab	Motiv	Tu bebe ya te puede escuchar, dile cuanto lo quieres. Un mensaje de WawaRed
62	25	Lun		Mami, alegrate! Ven a tu control. Un mensaje de WawaRed
63	25	Mier	Alarma	Si tienes temperatura mayor de 37.5 acude rapidito a tu centro de salud. Un mensaje de WawaRed
64	25	Sab	Edu	Evita tomar medicinas que no te dieron en tu centro de salud. Algunas medicinas pueden danar al bebe. Un mensaje de WawaRed

65	26	Lun		Se feliz, Mami! Ven a tu control. Un mensaje de WawaRed
66	26	Mier	Inf. Uri	Para evitar infecciones cuando vaya al bano limpiate de adelante hacia atras, para no llevar bacterias a tu vagina. Un mensaje de WawaRed
67	26	Sab	Nutri	Come saludable, consume: pescado, visceras, pollo, carnes rojas, leche, menestras, frutas y verduras. Un mensaje de WawaRed
68	27	Lun		Tu bebe quiere salud! Ven a tu control. Un mensaje de WawaRed
69	27	Mier	Alarma	Si se te hinchan los pies, manos o cara, puede que sufras de presion alta, acude de inmediato a tu centro de salud. Un mensaje de WawaRed
70	27	Sab	Nutri	Mami, toma tus vitaminas porque es importante para ti y tu bebe. Un mensaje de WawaRed
71	28	Lun		Ven a tu control, quiza tengas que caminar, pero sabrás como está tu bebe. Un mensaje de WawaRed
72	28	Mier	Alarma	Si tienes dolor de cabeza, zumbidos y dificultad para ver, puedes sufrir de presion alta acude rapidito a tu centro de salud
73	28	Sab	Motiv	Hoy es un día especial para ti! Tu bebe sigue creciendo, ahora reconoce tu voz. Hablale y estimulalo con musica. Un mensaje de WawaRed
74	29	Lun		Para que tu bebe este sanito! Ven a tu control. Un mensaje de WawaRed
75	29	Mier	Alarma	Si tienes flujo vaginal con picazon o ardor en tu vagina, acude a tu centro de salud. Un mensaje de WawaRed
76	29	Sab	Edu	Pon menos sal y condimentos y come alimentos bajos en grasa, para evitar problemas de presion alta. Un mensaje de WawaRed
77	30	Lun		Mami, se feliz! Ven a tu control. Un mensaje de WawaRed
78	30	Mier	Edu	Las hemorroides o venas hinchadas en el recto son comunes durante el embarazo y en general desaparecen despues de dar a luz
79	30	Sab	Act. Fisica	No carges bultos y evita actividades pesadas durante estos ultimos meses. Un mensaje de WawaRed
80	31	Lun		Ven a tu control, no es perder toda la manana, es ganar salud para tu bebe. Un mensaje de WawaRed
81	31	Mier	Edu	Preparate para dar de lactar a tu bebe. Toma liquidos y alimentate bien. Un mensaje de WawaRed
82	31	Sab	Control	Desde ahora acude a tus controles cada 15 dias hasta las 36 semanas de embarazo. Un mensaje de WawaRed
83	32	Lun		Hazlo por tu bebe! Ven a tu control. Un mensaje de WawaRed
84	32	Mier	Nutri	Tus pechos comienzan a formar leche, es posible que manches tu ropa. Un mensaje de WawaRed
85	32	Sab	Nutri	Las grasas como frituras o mantequillas no son saludables y te aumentan de peso, evitalas. Un mensaje de WawaRed
86	33	Lun		Ven a tu control, la atencion puede demorar, pero es importante para ti y tu bebe. Un mensaje de WawaRed
87	33	Mier	Edu	Tu bebe puede patear muy fuerte o en el mismo lugar. Esto puede ser doloroso o incomodo, pero no te lastimara. Un mensaje de WawaRed
88	33	Sab	Sexual	Disfruta tus relaciones sexuales, no las suspendas a menos que te indique tu medico o que tu quieras suspenderlas. Un mensaje de WawaRed
89	34	Lun		Animate, Mami! Ven a tu control. Un mensaje de WawaRed
90	34	Mier	Motiv	Prueba acariciarte el vientre si te sientes estresada, al sentir a tu bebe podras relajarte. Disfruta tu día! Un mensaje de WawaRed
91	34	Sab	Edu	Tu bebe sigue creciendo, ahora tu bebe esta mas atento a todo lo que le rodea, evita lugares molestos
92	35	Lun		Tu bebe te necesita! Ven a tu control. Un mensaje de WawaRed
93	35	Mier	Alarma	Si los movimientos de tu bebe disminuyen o no los sientes acude a tu centro de salud de inmediato. Un mensaje de WawaRed
94	35	Sab	Puerperio	Planifica donde vas a dar a luz, prepara tu maleta y la de tu bebe (ropa, utiles de aseo, etc). Consulta con tu obstetrix para mas detalles
95	36	Lun		Ven a tu control: quiza tengas que esperar, pero es lo mejor para tu bebe. Un mensaje de WawaRed
96	36	Mier	Nutri	Sentir un poco de ahogo es algo comun en el embarazo pero si sientes que no puedes o te duele al respirar acude a tu centro de salud
97	36	Sab	Control	Ya tienes 36 semanas de embarazo, ya se acerca el momento del parto. Debes de acudir a tus controles cada semana. Tanquila, estaran bien

98	37	Lun		Es lo mejor para tu bebe! Ven a tu control. Un mensaje de WawaRed
99	37	Mier	Nutri	Preparate para el regreso a casa despues del nacimiento. Planea quien te acompanara y ayudara despues de haber dado a luz
100	37	Sab	Motivacion ales	Felicitaciones ya estas por terminar el embarazo, si aun no nace tu bebe muy pronto lo hara. Un mensaje de WawaRed
101	38	Lun		Tu salud es importante! Ven a tu control. Un mensaje de WawaRed
102	38	Mier	Puerperio	Si se te rompe la fuente o pierdes liquido por tus partes (vagina) acude de inmediato a tu centro de salud. Un mensaje de WawaRed
103	38	Sab	Puerperio	Si tienes contracciones frecuentes o intensas, cada 3 o 5 minutos acude de inmediato a tu centro de salud, tu bebe esta por nacer
104	39	Lun		Tu bebe es importante! Ven a tu control. Un mensaje de WawaRed
105	39	Mier	Puerperio	Despues de una semana de haber dado a luz acude para tu centro de salud para tu control. Un mensaje de WawaRed
106	39	Sab	Puerperio	Despues de un mes de haber dado a luz acude al consultorio de planificacion familiar. Un mensaje de WawaRed
107	40	Lun		Mami ponle ganas! Ven a tu control. Un mensaje de WawaRed
108	40	Mier	Edu	Recuerda que cuando nazca tu bebe le debes de dar lactancia materna exclusiva para poder protegerlo de muchas enfermedades
109	40	Sab	Puerperio	Despues del embarazo debes de seguir tomando tus vitaminas. Un mensaje de WawaRed
110	41	Lun		Cuida tu salud! Ven a tu control. Un mensaje de WawaRed
111	41	Mier	Vacu	Las vacunas son importantes para tu bebe, recuerda cumplir con el programa de vacunacion y llevarlo a sus controles. Un mensaje de WawaRed
112		Sab	Despedida	WawaRed te agradece por dejarnos acompanarte durante tu embarazo. Esperamos que nuestra compania haya sido de tu agrado

Table A2. Specific Messages: Delivered only to Women presenting the Specific Condition

ID	Week	Hiperemesis
113	5	Si presenta nauseas o vomitos come alimentos en pequenas cantidades. Un mensaje de WawaRed
114	6	Si presenta nauseas o vomitos, coma varias veces al dia, consuma alimentos solidos y liquidos por separado. Un mensaje de WawaRed
115	7	Si presentas vomitos abundantes debe de acudir de inmediato a tu centro de salud o a emergencia del hospital mas cercano
116	8	No te olvides de tomar liquido cuando te calman las nauseas, es necesario para que no te deshidrates. Un mensaje de WawaRed
117	9	Comer pequenas cantidades de carne de vaca, pollo o pescado pueden ayudar a aliviar tus nauseas o vomitos. Un mensaje de WawaRed
118	10	Si te duele mucho la cabeza, te sientes confudida o te late muy rapido el corazon, acude de inmediato a tu centro de salud
119	11	Las nauseas y vomitos calman despues de los 3 primeros meses de embarazo, ten paciencia. Un mensaje de WawaRed
120	12	Si tienes los labios secos, los ojos hundidos y la piel seca pueda ser que te encuentres deshidratada, acude a emergencia de inmediato
121	13	El comer pequenas cantidades de nueces antes de acostarse o en las noches puede ayudarte a disminuir las nauseas o vomitos
122	14	Comer en pequenas cantidades podra aliviar tus nauseas o vomitos. Un mensaje de WawaRed
123	15	Para mayor informacion sobre nauseas o vomitos consulta en tu centro de salud. Un mensaje de WawaRed
124	16	Si presentas fiebre o dolor de barriga acude de inmediato tu centro de salud. Un mensaje de WawaRed
125	17	Para disminuir las nauseas puedes comer alimentos secos como galletitas. Un mensaje de WawaRed
126	18	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
127	19	Si tienes nauseas y vomitos es normal, no te preocupes, estas molestias van a calmar pasadas las 20 semanas de embarazo (3 primeros meses)
128	20	Tus nauseas y vomitos ya deben haber calmado, si aun continuas con estas molestias acude a tu centro de salud para que te evaluen
		NUTRICIÓN: SOBRE PESO
129	7	Recuerda que debes evitar alimentos con alto contenido en grasas, no son saludables, prefiere comer frutas y verduras
130	8	Evita los dulces,bebidas gaseosas,chisitos o cosas empaquetadas.No son buenos para tu salud ni la de tu bebe. Un mensaje de WawaRed
131	9	El sobrepeso te puede ocasionar problemas en el embarazo, como presion alta, y diabetes. Por eso es importante controlarlo
132	10	Evita consumir embutidos como jamonadas, hot dog o chorizo, contienen mucha grasa. Un mensaje de WawaRed
133	11	Consume alimentos en los que se indique bajo contenido de grasas. Un mensaje de WawaRed
134	12	No frias tus comidas, mejor cocinalos a vapor o en el horno. Un mensaje de WawaRed
135	13	No olvide la importancia de realizar ejercicios (psicoprofilaxis) durante el embarazo, son importantes para tu salud. Un mensaje de WawaRed
136	14	A tus ensaladas solo coloque limon o vinagre. Un mensaje de WawaRed
137	15	Evita el consumo de quesos muy grasosos. Un mensaje de WawaRed
138	16	Cuando comas pollo u otras aves retiraes el pellejo, contienen mucha grasa. Un mensaje de WawaRed
139	17	No consumas grasas saturadas de origen animal como la mantequilla, son malas para la salud. Un mensaje de WawaRed
140	18	Una alternativa al azucar es usar azucar rubia o chancaca, tienen menos calorías. Un mensaje de WawaRed

141	19	Si vas a consumir frutas, que sean frutas frescas, no en conserva porque tienen mucha azucar. Un mensaje de WawaRed
142	20	Si vas a acudir a una fiesta o reunion controla el consumo de los bocaditos. Un mensaje de WawaRed
143	21	Evita consumir comidas que tengan mucha grasa. Un mensaje de WawaRed
144	22	Si deseas comer alimentos con menos grasas escoge las menestras y cereales. Un mensaje de WawaRed
145	23	Mastica bien tus alimentos y come despacio, esta es una forma de controlar lo que comes y comer menos cantidad. Un mensaje de WawaRed
146	24	Evita ponerle mucho aceite a tus comidas. Un mensaje de WawaRed
147	25	Evita el consumo de alimentos con muchas calorías, como el platano o la lucuma. Un mensaje de WawaRed
148	26	Si te da hambre entre las comidas come alguna manzana u otra fruta. Un mensaje de WawaRed
149	27	Come pescado varias veces a la semana, es muy nutritivo. Un mensaje de WawaRed
150	28	Prefiere el consumo de alimentos bajos en calorías. Un mensaje de WawaRed
151	29	Si tienes sobrepeso consume menos grasas y harinas. Un mensaje de WawaRed
152	30	Debes de establecer un horario para tus alimentos y trata de respetarlos para no comer fuera de hora, esta es una forma de controlar tu peso
153	31	Consume abundante agua, se recomienda que minimo debes de tomar 8 vasos de agua al dia. Un mensaje de WawaRed
154	32	Prefiere el consumo de ensaladas, son mas saludables. Un mensaje de WawaRed
155	33	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
156	34	En vez de comer postres y dulces come frutas frescas. Un mensaje de WawaRed
157	35	Si tienes sobrepeso trata de quitar todas las grasas a tus guisos y sopas, no son saludables. Un mensaje de WawaRed
158	36	Los productos "light" o "diet" tienen menos calorías, pero si los consumes en grandes cantidades te van a engordar
159	37	Cuando salgas, lleva contigo alguna fruta como una manzana, asi evitas comer dulces o golosinas que no son saludables
160	38	Controla el consumo de calorías en tus alimentos. Un mensaje de WawaRed. Un mensaje de WawaRed
161	39	Si deseas mayor informacion sobre nutricion y sobrepeso acude a tu centro de salud. Un mensaje de WawaRed
162	40	No debes de subir mucho de peso, en tu control prenatal te dira cuantos kilos debes de subir, subir en exceso es perjudicial para tu salud
163	41	Use un plato mas pequeno, de manera que sus porciones no sean tan grandes. Un mensaje de WawaRed
164	42	Piense antes de comer, en vez de comer solo lo que tienes a la mano. Un mensaje de WawaRed
		NUTRICIÓN: DESNUTRICIÓN
165	7	Debes de comer todas las comidas nutritivas que pueda conseguir como leche, queso, pollo, huevo, carne, pescado, fruta, verdura, menestra
166	8	Necesita mas hierro, acido folico, calcio y vitamina A. Debe tratar de comer esas vitaminas todos los dias porque tu bebe los necesita
167	9	Puede ser peligroso evitar alimentos. Para estar sana durante y despues del embarazo necesita comer una gran variedad de alimentos
168	10	Las proteinas son importantes para el crecimiento de tu bebe, las mejores fuentes de proteinas son: Carnes, pescado, pollo, huevo, sangrecita
169	11	En tu caso es importante ingerir carbohidratos porque producen energia (pan, cereales, arroz, papa, fideos, frutas y vegetales)
170	12	El calcio ayuda a tener huesos y dientes fuertes, y mejora tu sistema nervioso. Fuentes de calcio son: leche, queso, yogurt, espinacas.
171	13	Vitamina A ayuda a una piel saludable, buena vision y huesos fuertes. Fuentes de vitamina A: Zanahoria, vegetales de hojas verdes, camote

172	14	Vitamina C ayuda a tener encias, dientes y huesos sanos, tambien ayuda a absorber el hierro.Fuentes de vitamina C:Naranja, tomate, brocoli
173	15	Vitamina B6 ayuda a aprovechar mejor tus alimentos. Fuentes de vitamina B6: Cerdo, jamon, cereales integrales y platano
174	16	Vitamina B12 ayuda a tus globulos rojos y a tu sistema nervioso. Las mejores fuentes de vitamina B12 son: carne, pollo, pescado, leche
175	17	Vitamina D ayuda a tus huesos y dientes, y ayuda a la absorcion del calcio. Fuentes de vitamina D:Productos lacteos, cereales y panes
176	18	El acido folico es bueno para tu salud,lo obtienes de vegetales de hoja verde y amarillos oscuros,tambien de habas y frutos secos
177	19	Las grasas ayudan a almacenar la energia corporal.Fuentes de grasa son:carne, productos lacteos(leche entera, mantequilla) aceite vegetal
178	20	Una mujer que esta embarazada debe de comer lo suficiente para su bebe y para si misma (3 comidas principales y un refrigerio)
179	21	Tienes poco peso, aparte de las tres comidas y un refrigerio obligatorio para las embarazadas tu debes comer uno mas, eso ayudara a tu bebe
180	22	Estas con poco peso, recuerda que tienes que ganar 12 kilos durante tu embarazo, debes comer tus 3 comidas principales y un refrigerio
181	23	Debes de hacer un horario de tus comidas, no dejes de comer alguna de ellas. Un mensaje de WawaRed
182	24	Si deseas mayor informacion sobre nutricion y bajo peso acude a tu centro de salud. Un mensaje de WawaRed
183	25	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
184	26	Piensa en tu bebe, una buena alimentacion lo ayudara. Un mensaje de WawaRed
185	27	En tu centro de salud te indicaran cuanto peso deberas subir por mes. Un mensaje de WawaRed
186	28	Si estas con bajo peso puede suceder que tu bebe nazca antes de tiempo y no este listo. Por eso no descuides tu alimentacion
187	29	De tu buena alimentacion depende el buen desarrollo cerebral de tu bebe. Un mensaje de WawaRed
188	30	Cuando acudas a tu control preguntale al profesional que te atiende como esta tu peso y que alimentos debes de consumir para mejorarlo
189	31	Para disminuir las complicaciones en tu embarazo es necesario que tengas un peso adecuado, no descuides tu alimentacion
190	32	Es recomendable consumir 3 vegetales (o 3 platos de ensalada) y 4 a 5 frutas al dia. Un mensaje de WawaRed
191	33	Deberias de tomar 4 tazas de leche o yogurt al dia. Un mensaje de WawaRed
192	34	Recuerda que el peso que ganas durante el embarazo lo perderas cuando nazca tu bebe. Un mensaje de WawaRed
193	35	Para que tu bebe nazca con un peso adecuado necesita de tu buena alimentacion. Un mensaje de WawaRed
194	36	Despues de comer toma un descanso de 30 minutos, de esa manera asimilaras mejor los alimentos. Un mensaje de WawaRed
195	37	El estres muchas veces contribuye a que no aumentes de peso, trata de evitarlo. Un mensaje de WawaRed
196	38	Come alimentos en buen estado, cuida la higiene, evita enfermedades del estomago, estas enfermedades te bajan de peso
197	39	Si a pesar de que sigas una buena alimentacion no llegas a subir de peso pide ayuda especializada en tu centro de salud
198	40	Si estas baja de peso debes comer 4 veces al dia:desayuno, almuerzo, cena y un refrigerio ligero en la manana
199	41	Algunas veces el sentirse triste disminuye tu apetito, trata de mejorar tu animo o pide consejeria en tu centro de salud
200	42	Una buena alimentacion asegura una rapida recuperacion despues del parto. Un mensaje de WawaRed
		ANEMIA
201	6	El consumo de alimentos ricos en hierro previene la anemia. Un mensaje de WawaRed

202	7	Consume alimentos de origen animal ricos en hierro: hígado, sanrecita, bofe, pescado. Un mensaje de WawaRed
203	8	Recuerde que el pollo y otras aves también son alimentos ricos en hierro. Un mensaje de WawaRed
204	9	Recuerde que el pescado también es un alimento rico en hierro, debes comer también la parte oscura. Un mensaje de WawaRed
205	10	Recuerde que el huevo es un alimento rico en hierro, es preferible lo comas sancochado. Un mensaje de WawaRed
206	11	Los alimentos de origen animal tienen más hierro que los frijoles y lentejas, prefíerelos. Un mensaje de WawaRed
207	12	Los alimentos de origen animal tienen más hierro que las verduras, prefíerelos. Un mensaje de WawaRed
208	13	Los alimentos ricos en hierro acompañalos con cítricos (naranja, tomates, limones) te ayudarán a absorberlos mejor
209	14	Los granos integrales (arroz y trigo), son ricos en ácido fólico, necesarios para mejorar tu anemia y evitar problemas en tu bebé
210	15	Tu organismo absorbe en mayor porcentaje el hierro de las carnes y vísceras, después las menestras y último el de las verduras
211	16	Toma diariamente 1 pastilla que contenga hierro y ácido fólico te ayudan a prevenir la anemia. Un mensaje de WawaRed
212	17	Una mujer embarazada necesita mucho hierro para prevenir la anemia. Un mensaje de WawaRed
213	18	En el parto pierdes sangre, puedes recuperarla cuando ingieres alimentos ricos en hierro, pero también te puedes ayudar con vitaminas
214	19	Recuerda que necesitas mucho hierro para que tu bebé esté sano. Un mensaje de WawaRed
215	20	Muchas veces la anemia está asociado a no alimentarse adecuadamente y no consumir tus vitaminas. Un mensaje de WawaRed
216	21	No te olvides de consumir menestras y alimentos ricos en vitaminas
217	22	Muchas dietas que se usa para bajar de peso o la alimentación desordenada producen anemia, no te descuides con tu alimentación
218	23	Que no falte carne, vísceras, pescado, pollo en tu almuerzo y cena. Un mensaje de WawaRed
219	24	Come un trozo de carne (vaca, pollo, pescado) con una porción de menestras, la carne ayuda a asimilar mejor el hierro de las menestras
220	25	Los cítricos como la naranja, limón, mandarina, lima, ayudan a absorber mejor el hierro. Un mensaje de WawaRed
221	26	Puedes encontrar ricas fuentes de hierro en menestra, marisco, soya, frutas secas (pasas, nueces) y vegetales de hojas verdes
222	27	Los cítricos como la naranja, limón, mandarina, lima, maracuya te ayudan a absorber mejor el hierro. Un mensaje de WawaRed
223	28	Evita los alimentos enemigos del hierro: infusiones, té, café, gaseosas. No te ayuda a absorber el hierro que ingieres en tus alimentos
224	29	Tus suplementos de hierro pueden causar malestar estomacal, si te incomoda hable con el profesional que te atiende para buscar una solución
225	30	Si tomas tus vitaminas y comes adecuadamente te sentirás de mejor ánimo. Un mensaje de WawaRed
226	31	Las mujeres embarazadas necesitan mayor cantidad de hierro, toma tus vitaminas y come adecuadamente. Un mensaje de WawaRed
227	32	La palidez puede ser un signo de anemia, debes de comer alimentos ricos en hierro, ayúdate también con el sulfato ferroso
228	33	Si deseas mayor información sobre anemia y embarazo acude a tu centro de salud. Un mensaje de WawaRed
229	34	Las mujeres embarazadas necesitan consumir hierro y comer adecuadamente. Un mensaje de WawaRed
230	35	No tomes café o té con tus comidas, esto evita que no absorbas el hierro de las comidas, cambia por un jugo de naranja o una limonada
231	36	El cansancio y agotamiento se puede deber a que sufres de anemia, para mejorar estas molestias come adecuadamente y toma tus vitaminas
232	37	El cansancio intelectual (sueño, falta de concentración) se debe a la anemia, por eso no te olvides de tomar tus vitaminas y come bien

233	38	Recuerda que las las vitaminas no reemplazan tus alimentos, solo complementan tu alimentacion, por eso come adecuadamente
234	39	La anemia causa que tu corazon lata mas rapido, por eso no te olvides de tomar tus vitaminas
235	40	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
236	41	Recuerda de no dejar de tomar tus suplementos vitaminicos, todavia lo necesitaras aunque ya haya nacido tu bebe. Un mensaje de WawaRed
237	42	Despues de que nacio tu bebe debes de seguir comiendo alimentos ricos en hierro para poder recuperarte del parto
		TABACO
238	7	Si necesitas ayuda para dejar de fumar pide consejeria en tu centro de salud lo mas pronto posible. Un mensaje de WawaRed
239	8	Recuerda que el fumar hace dano a tu bebe, piensa en ti y en el. Un mensaje de WawaRed
240	9	No estes expuesta a humos de cigarro, le hace tanto dano a tu bebe y a ti como si los estuvieras fumando. Un mensaje de WawaRed
241	10	¿Sabias que si fumas tienes mas riesgo de tener caries?. Un mensaje de WawaRed
242	11	Si alguien cerca a ti esta fumando pidele que apague el cigarro porque estas embarazada. Un mensaje de WawaRed
243	12	¿Sabias que la primera causa de cancer de pulmon es debida a fumar?. Un mensaje de WawaRed
244	13	Si no tienes fuerza de voluntad para dejar de fumar, pide apoyo a tus familiares y amigos. Un mensaje de WawaRed
245	14	El fumar es un factor de riesgo para enfermedades del corazon. Un mensaje de WawaRed
246	15	Si sientes la necesidad de querer fumar solo por tener algo en la boca trata de masticar un chiclet. Un mensaje de WawaRed
247	16	Debes hacer respetar tus derechos, si ves a alguien fumando en un lugar publico pidele que apague el cigarro. Un mensaje de WawaRed
248	17	Cuando salgas frecuenta lugares donde no esta permitido fumar, como restaurantes o lugares cerrados. Un mensaje de WawaRed
249	18	No permitas que nadie fume en tu casa, si alguien lo hace pidele que lo haga afuera. Un mensaje de WawaRed
250	19	Si tienes ganas de fumar realiza otra actividad que distraiga tu mente, esto te ayudara a que se te vayan las ganas. Un mensaje de WawaRed
251	20	Ten en cuenta que las personas que fuman se les ponen amarillo los dientes. Un mensaje de WawaRed
252	21	El tabaco del cigarro produce mal aliento, tenlo en cuenta la proxima vez que tengas ganas de fumar. Un mensaje de WawaRed
253	22	El humo del cigarro le da mal olor a tu ropa, tenlo en cuenta la proxima vez que tengas ganas de fumar. Un mensaje de WawaRed
254	23	¿Cuanto dinero gastas en cigarros? ¿Puedes pensar cuanto dinero ahorrarias si dejaras de fumar?. Un mensaje de WawaRed
255	24	¿Te ha pasado que muchas veces no puedes sentir bien los olores? Esto le pasa a las personas que fuman. Un mensaje de WawaRed
256	25	Despues de 10 anos de haber dejado de fumar se reduce el riesgo de contraer cancer de pulmon a la mitad. Un mensaje de WawaRed
257	26	Recuerda que si fumas tu bebe puede nacer con bajo de peso o antes de tiempo. Un mensaje de WawaRed
258	27	Si te da ganas de fumar puedes salir a caminar para distraerte y no pensar en eso. Un mensaje de WawaRed
259	28	Si te da ganas de fumar puedes leer un libro para que no pienses en eso. Un mensaje de WawaRed
260	29	El fumar no te va a resolver los problemas de estres que tienes, seria mejor que los enfrentes de otra manera. Un mensaje de WawaRed
261	30	Ahora necesitas mayor cantidad de vitamina C. Si fumas, el tabaco te consumira la vitamina C que tienes. Un mensaje de WawaRed

262	31	No consumas cafe, ni te, esto aumenta la ansiedad por querer fumar. Un mensaje de WawaRed
263	32	Las personas que no fuman tienen mejor calidad de vida. Un mensaje de WawaRed
264	33	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
265	34	Si deseas mayor informacion sobre tabaco y embarazo acude a tu centro de salud. Un mensaje de WawaRed
266	35	Ten en cuenta que los ninos de madres fumadoras son mas propensos a que ellos mismos tambien fumen. Un mensaje de WawaRed
267	36	Para que tu bebito no se enferme de tos cronica y asma es mejor que no fumes y que no lo expongas a personas que lo hacen
268	37	Si vas a dar de lactar no puedes fumar, porque todo el toxico del cigarrillo pasa a la leche materna y de alli a tu bebe
269	38	No permitas que nadie fume en la habitacion de tu bebe, pidele que se retire. Un mensaje de WawaRed
270	39	No llesves a tu bebe a lugares donde sabes que suelen fumar, eso es perjudicial para tu salud. Un mensaje de WawaRed
271	40	Si ves que alguien fuma cerca a tu bebe pidele que se retire, esto es perjudicial para tu bebe. Un mensaje de WawaRed
272	41	Piensa en ti y en tu bebe antes que en el cigarro. Un mensaje de WawaRed
273	42	No te des por vencida, tu puedes seguir sin fumar. Un mensaje de WawaRed
		HIPERTENSIÓN ARTERIAL
274	7	Si tienes dolor de cabeza que no te calman debes de acudir a tu centro de salud porque puede ser que te ha subido tu presion
275	8	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
276	9	Si se le hinchan los pies, las manos y la cara, debe de acudir a tu centro de salud o a emergencia del hospital mas cercano
277	10	El dolor de cabeza intenso, que no descansa, es senal de presion alta,acude de inmediato a la emergencia del hospital mas cercano
278	11	Si tienes zumbidos de oido puede ser que tu presion este muy alta, acude de inmediato a la emergencia mas cercana
279	12	Si has notado que has subido mucho de peso de forma muy rapida, acude a tu centro de salud para tu evaluacion. Un mensaje de WawaRed
280	13	Si tus orinas son muy espumosas, puede ser un sintoma de pre eclampsia, debes de acudir a tu centro de salud de inmediato
281	14	Evita las comidas saladas. Un mensaje de WawaRed
282	15	Controla tu dieta, come menos grasas y frituras. Un mensaje de WawaRed
283	16	Trata de estar tranquila. Un mensaje de WawaRed
284	17	Para evitar que le suba la presion debe de comer alimentos ricos en proteinas, pero con poca sal. Un mensaje de WawaRed
285	18	Si tu presion esta elevada, te falla la vista,o se te hincha mas la cara o te da un ataque(convulsiones), acude a la emergencia mas cercana
286	19	La presion alta puede danar a tu bebe, ademas de danar tu corazon, ojos, cerebro y rinones. Un mensaje de WawaRed
287	20	Controla tu presion todos los dias,en el horario que te ha indicado,muchas veces puedes tener la presion alta y no sentir molestias
288	21	Tu presion no puede ser mayor a 140/90, si es mayor debes de acudir a tu centro de salud o a emergencia del hospital mas cercana
289	22	Si tienes dolor de cabeza y ves lucecitas debes acudir de inmediato a tu centro de salud o a emergencia del hospital mas cercano
290	23	Si sabe que sufre de presion alta y presenta nauseas y mareos acuda de inmediato a la emergencia del hospital mas cercano
291	24	Si tienes presion alta y tienes sobre peso puedes tener mayores complicaciones, trata de mantener tu peso
292	25	¿Ya sabes donde puedes medirte la presion todos los dias? Si no es asi trata de averiguar el lugar mas cercano
293	26	Trata de medirte la presion todos los dias. Un mensaje de WawaRed

294	27	Debe de incluir verduras y frutas en tu alimentacion, es importante para tratar de controlar tu peso y presion
295	28	Si te han indicado medicamentos para que controles tu presion es importante que los tomes a la hora que te ha indicado tu medico
296	29	Ubica un lugar donde te midan la presion todos los dias. Un mensaje de WawaRed
297	30	Si deseas mayor informacion sobre presion alta puedes acudir a tu centro de salud. Un mensaje de WawaRed
298	31	Preeclampsia es si tienes presion alta con otros sintomas(orina espumosa o cara o manos hinchadas)si es tu caso acuda a tu centro de salud
299	32	Si siente que perder sensibilidad en alguna parte de tu cuerpo debes de acudir a tu centro de salud o a emergencia del hospital mas cercano
300	33	Si has podido bajar tu presion no debes de bajar la guardia, debes de seguir con tus controles y cuidando tu salud
301	34	Debes de seguir todas las recomendaciones que te han dado para cuidar tu presion, no solamente cuando te sientas mal
302	35	Sigue las recomendaciones que te dio el profesional que te atiende para tu alimentacion, consume menos grasas y sal
303	36	Disminuya el consumo de comidas altas en sodio como comidas enlatadas, jamon, embutidos, y chizitos, para que no suba tu presion
304	37	Los condimentos mejoran el sabor de las comidas.Pero muchos tienen sodio (sal),come natural usa como condimentos hierbas aromaticas
305	38	Siempre consultar con el profesional que te atiende cualquier duda sobre tu salud y antes de comenzar un nuevo tratamiento con medicamentos o dieta
306	39	Los alimentos que tienen un sabor muy salado tienen mucha sal, evita su consumo. Un mensaje de WawaRed
307	40	Las salsas como la mostaza o el ketchup tiene mucho sodio (sal) debes de evitar su consumo. Un mensaje de WawaRed
308	41	Si vas a una fiesta o reunion no comas los bocaditos, muchos de estos tienen mucha sal. Un mensaje de WawaRed
309	42	Antes de comer piensa dos veces si esta bien lo que vas a comer, no puedes comer alimentos que tengan mucha sal y grasa
		DIABETES MELLITUS
310	7	Coma comidas saludables, y no solamente lo que es mas facil, o lo que encuentra en el refrigerador
311	8	Trata de no consumir salsas. Un mensaje de WawaRed
312	9	Trata de consumir alimentos bajos en grasas. Un mensaje de WawaRed
313	10	Mastique lenta y completamente, saboreando cada bocado, en vez de comer lo mas que puede en el menor tiempo posible
314	11	Disminuya la cantidad de carne de res que come.Use mas pollo o pescado. Cuando coma carnes rojas, elija la que tiene menos grasa
315	12	Saque la grasa antes de cocinar la carne,incluyendo la piel del pollo,evite agregar grasas durante el proceso de cocinar
316	13	Elimina de tu dieta alimentos grasosos:embutidos,chorizos, salchichas,manteca, mantequilla,margarina, aderezos de ensaladas,grasa de cerdo
317	14	Evita comer helados, contienen mucha grasa. Un mensaje de WawaRed
318	15	Aumente los alimentos ricos en fibras. Consuma panes , cereales y galletitas integrales. Un mensaje de WawaRed
319	16	Aumente el consumo de fibras.Coma mas verdura,tanto crudas como cocidas.En vez de jugos de fruta embotellados o en caja,coma frutas frescas
320	17	Trata de consumir cebada, trigo, frijoles, lentejas y arvejas.
321	18	Trata de consumir alimentos ricos en fibras. Un mensaje de WawaRed
322	19	Los alimentos ricos en fibra disminuyen el colesterol, no te olvides de consumirlos. Un mensaje de WawaRed
323	20	Coma menos cantidad de alimentos preparados, y trate de evitar restaurantes de servicio rapido. Un mensaje de WawaRed
324	21	Evita comer miel, jalea, mermelada, caramelos, gelatina, y pasteles dulces. Un mensaje de WawaRed

325	22	No tome gaseosas. Una lata de gaseosa regular de unos 360 cc contiene azucar equivalente a nueve cucharaditas de azucar.
326	23	Hornee, use la parrilla, o hierva las carnes y los sustitutos en vez de freirlos. Un mensaje de WawaRed
327	24	No le pongas harina o pan rallado cuando cocines tus carnes. Un mensaje de WawaRed
328	25	Trate de sacar la grasa que esta visible antes y despues de cocinar.
329	26	Las verduras son fuente de vitaminas y minerales.Las verduras frescas tienen mas vitaminas que las envasadas, y tienen menos sal
330	27	Prefiere consumir la fruta entera y fresca. Un mensaje de WawaRed
331	28	Trate de conseguir un glucometro,sirve para medir el nivel de azucar en la sangre, seria bueno que tenga uno y aprenda a usarlo
332	29	Si te van a invitar a comer nunca comas alimentos que tu sabes que tu sabes que no debes. Tu salud es mucho mas importante.
333	30	Si no puede comer en tu casa lleva tu dieta estricta con contigo. Un mensaje de WawaRed
334	31	Si come en un restaurante pida comidas que usted conoce que se cocinan en forma simple.Evite las frituras, cremas, rellenos, postre,empanada
335	32	Trate de comer dentro de una hora del horario normal de tu comida. Si hay un retraso, sancoche coliflor y/o zanahoria y consumalo
336	33	No te olvides que debes de medir tus niveles de azucar de forma continua, es la unica forma de poder saber si estas controlado la diabetes
337	34	Prefire consumir las frutas frescas a las enlatadas. Un mensaje de WawaRed
338	35	No descuides tu tratamiento, sigue las indicaciones de tu medico. Un mensaje de WawaRed
339	36	Tus pies son importantes,siempre estate atenta de cambios de color,ampollas o cortadas,si presentas estas molestias consulta a tu medico
340	37	La medicacion que te indica tu medico es para que la tomes como te indico, no solo cuando te sientas mal. Un mensaje de WawaRed
341	38	Es importante que cuides tus pies, evita caminar descalzos, si te haces alguna herida en tu pie avisale a tu medico
342	39	No te estreses, el stres aumenta los niveles de azucar en la sangre. Un mensaje de WawaRed
343	40	No olvides controlar tu nivel de azucar. Un mensaje de WawaRed
344	41	Si deseas mayor informacion sobre diabetes puedes acudir a tu centro de salud. Un mensaje de WawaRed
345	42	Puedes encontrar mas consejos para tu embarazo llamando gratis al *121. Un mensaje de WawaRed
346		En vez de comer frutas enlatadas prefiera comer frutas frescas o jugos naturales. Un mensaje de WawaRed
		INFECCION URINARIA
347	.	Antes de tomar cualquier medicacion realízate un examen de orina. Un mensaje de WawaRed
348	.	Para realizar una buena toma de tu muestra de orina debe de lavar tus genitales (entre los labios de la vagina)
349	.	Cuanto tomes tu muestra de orina no coloque el 1º chorro de orina en el frasco,recien el 2º chorro, antes de terminar retire el frasco
350	.	Si vas a descartar una infeccion urinaria, debes de dejar primero tu muestra de orina y despues empezar tu tratamiento
351	.	Pregunta en el laboratorio en cuantos dias estaran sus resultados para que los puedas llevar al centro de salud y lo evaluen en tu consulta
352	.	No te olvides de tomar las pastillas que te indicaron en tu centro de salud, luego de haber recolectado tu muestra de orina.
353	.	Si tienes dolor,comezon o ardor cuando orina,es posible que tengas una infeccion urinaria.Si es asi,acuda a tu centro de salud
354		No te aguantes las ganas de orinar, acude al baño lo mas pronto posible. Un mensaje de WawaRed
355		Despues de terminar tu tratamiento debes de acudir a tu centro de salud para verificar si te curaste

		SIFILIS
356	.	¿Ya le pusieron tu inyección? No te olvide que son 3 dosis , una dosis por cada semana . Eso es necesario para la salud de tu bebe
357	.	¿Tu pareja la acompaña al centro de salud? Recuerde que ambos tienen que ir al siguiente control para recibir consejería y tratamiento
358	.	¿Tu pareja ya recibió tratamiento? Recuerde que ambos tienen que recibir tratamiento completo por el bien de tu bebe
359	.	Recuerde que no puede tener relaciones sexuales con tu pareja hasta que ambos terminen su tratamiento. Un mensaje de WawaRed
360		Recuerda que es muy importante que ambos concluyan su tratamiento, para así evitar reinfectarte. Un mensaje de WawaRed
		VIH
361	.	Ahora debe de comer mas, debe de realizar 3 comidas principales, además de incluir 1 refrigerio. Un mensaje de WawaRed
362	.	Recuerda que debes de tomar medicación para prevenir que tu bebe se infecte. Un mensaje de WawaRed
363	.	Si esta tomando alguna medicación informele a tu medico para evaluar los posibles riesgos y beneficios que puede traer a tu bebe
364	.	Pregunte al profesional que le atiende que medicamentos no debe de consumir en el embarazo, y que otra medicina alternativa puede consumir
365	.	Toma tus pastillas tal como te ha indicado el profesional que te atiende, olvidarte de tomar estas pastillas puede ser malo para ti y tu bebe
366	.	No te olvides de acudir a todos tus controles, es importante para tu salud y la de tu bebe. Un mensaje de WawaRed
367	.	Tienes que recoger todos tus resultados de laboratorio y llevarlos al profesional que te atiende. Es importante llevar un buen control
		FIEBRE
368	.	Si tiene temperatura mayor de 38C y no le ha bajado a pesar de la medicación que le han recetado, debe de ir a la emergencia mas cercana
		TUBERCULOSIS
369	.	Pregunte a sus medicos que medicamentos no debe de consumir durante tu embarazo, y que otra medicina puede consumir para no danar a tu bebe
370	.	Acude todos los días al centro de salud para recibir tu medicación. Un mensaje de WawaRed. Un mensaje de WawaRed
371	.	Ahora debe de comer mas, debe de realizar 3 comidas principales, además de incluir un refrigerio. Un mensaje de WawaRed
372	.	No te olvides de acudir a tus controles, es importante para ti y tu bebe. Un mensaje de WawaRed
373	.	Es importante que todas las personas que viven contigo acudan al centro de salud para que los examinen. Un mensaje de WawaRed
374	.	Si algun miembro con quien vives tiene tos por mas de 2 semanas debes de llevarlo al centro de salud para su evaluación
375	.	¿Acudiste hoy a recibir tu medicación? No te olvides que es importante para tu salud y para la de tu bebe. Un mensaje de WawaRed
		ALCOHOL
376	.	Es importante que evites cualquier bebida alcoholica, debido a tu bebe. Si necesitas ayuda pide consejería en tu centro de salud
		DROGAS
377	.	Las drogas son perjudiciales para tu bebe, si necesitas ayuda pide consejería en tu centro de salud, estar dispuestos a ayudarte
378	.	La cocaína, heroína, marihuana, éxtasis y crack te hacen mal a ti y a tu bebe, no las consumas. Un mensaje de WawaRed

Table A3. Baseline Balance: Spillover Effects

	Control women close to treated women (1)	Control women far from treated women (2)	Adjusted difference (3)	Observations (4)
<i>Women Sociodemographic Characteristics</i>				
Age	25.47	25.59	1.16 (1.47)	586
Born in Lima	0.43	0.46	0.01 (0.12)	559
Education				
Incomplete secondary or lower	0.45	0.37	0.09 (0.05)	586
Complete secondary	0.34	0.46	-0.16** (0.08)	586
Incomplete tertiary	0.11	0.08	0.02 (0.08)	586
Complete tertiary	0.11	0.09	0.05 (0.04)	586
Occupation				
Unpaid domestic worker	0.62	0.70	-0.02 (0.05)	584
Paid domestic worker	0.12	0.08	0.01 (0.04)	584
Paid nondomestic work	0.08	0.07	0.01 (0.05)	584
Student	0.11	0.10	-0.03 (0.08)	584
Civil Status				
Single	0.16	0.17	-0.09 (0.08)	586
Married	0.23	0.13	0.17** (0.07)	586
Not married but living with partner	0.61	0.70	-0.09 (0.11)	586
Pre pregnancy weight (kilograms)	60.24	58.15	0.08 (2.66)	585
Height (meters)	1.53	1.53	0.01 (0.02)	586
<i>Women physical signals (1st control)</i>				
Weeks of pregnancy	11.77	11.72	0.97 (0.71)	583
Number of prior births	0.80	0.95	0.05 (0.15)	586
Temperature (Celsius)	36.64	36.54	0.07 (0.06)	584
Respiratory frequency	18.69	18.96	-0.70 (0.82)	584
Pulse	76.50	75.78	0.61 (1.36)	584
Systolic blood pressure	98.51	97.24	-0.29 (2.09)	584
Diastolic blood pressure	60.81	60.93	-1.03	584

Hemoglobin level	11.91	11.74	(0.90) 0.22	476
Anemic (hemoglobin level <11)	0.20	0.24	(0.25) -0.03	476
			(0.11)	
<i>Household Characteristics</i>				
Total household income (PEN)	748.78	716.67	4.37 (43.90)	582
Distance to health center (meters)	970.82	884.17	316.32 (238.27)	586
Tap water	0.78	0.76	0.01 (0.07)	585
Electricity	1.00	0.97	0.01* (0.00)	585
Internet	0.04	0.03	-0.01 (0.03)	585
Television	1.00	0.98	0.02 (0.02)	584
Refrigerator	0.61	0.63	-0.02 (0.11)	584
Electric kitchen	0.00	0.01	-0.02 (0.02)	584
Gas kitchen	0.97	0.99	-0.04 (0.03)	584
Kerosene kitchen	0.03	0.02	0.01 (0.04)	585
Digital video disc player	0.72	0.77	-0.06 (0.13)	585
Computer	0.08	0.05	0.05 (0.06)	585

Notes: This table presents baseline balance for spillover effects. Only control women are included in the analysis. Columns 1 and 2 present means; column 3 presents estimated coefficients and standard errors on an indicator for control women living within a radius of 25 meters from at least one treated woman. Ordinary least square regressions control for health center fixed effects and the number of pregnant women living within the 25-meter radius. Estimated standard errors, reported in parentheses, are clustered at the health center level. Significance at the 1, 5, and 10 percent levels is indicated by ***, ** and *, respectively.