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Improved menstrual health and the workplace: An RCT with female Bangladeshi garment workers*

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Abstract

Menstrual hygiene practices in low-income countries are often limited by lack of finance and information, with potentially adverse consequences for women's well-being and workplace outcomes. In a randomized controlled trial with around 1,900 female workers from four Bangladeshi garment factories, we relax both constraints individually and jointly by providing free sanitary pads and information on hygienic menstrual practices. Both access to sanitary pads and information improve menstrual practices, either by the adoption of new products, or by knowledge gains and improved use of traditional materials, and both interventions improve health outcomes. However, these positive effects do not translate to better labor outcomes, such as earnings and work attendance.

Keywords: Menstrual Health, Health Behavior, Labor Force Participation, Export Manufacturing

JEL Code: O14, O15, O35, M54, J32, J81

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1 Introduction

Female labor force participation has been shown to increase women's socio-economic well-being (Heath and Mobarak, 2015; Getahun and Villanger, 2018). Yet it is limited in many low-income countries, with negative effects on both overall economic performance and gender equity (Duflo, 2012; Klasen, 2018). For example, in Bangladesh, female workers constituted only 34.9 percent of the labor force in 2018 (World Bank, 2018). Recently, attention has turned to menstruation as a determinant of women's health and well-being, and of labor market participation, both at the extensive and the intensive margin.[1]

Unhygienic menstrual health management (MHM) is particularly pronounced in low-income countries where many women use basic materials, such as cloth, cotton, paper, sponges, leaves, or ash to manage their periods (Sumpter and Torondel, 2013; Loughnan et al., 2016; van Eijk et al., 2016). The consequences are increased risk of infections (Ahmed and Yesmin, 2008; Hulland et al., 2015; Garikipati and Boudot, 2017; Torondel et al., 2018), reduced well-being due to uncomfortable, itching or chafing menstrual products (McMahon et al., 2011; van Eijk et al., 2016), and fear of leakage, given widespread stigma around menstruation (Crichton et al., 2013; Sumpter and Torondel, 2013; Montgomery et al., 2016).

These effects can in turn adversely influence educational (Benshaul-Tolonen et al., 2021; Khanna, 2021) and labor outcomes (WSSCC, 2013; Schoep et al., 2019; Krenz and Strulik, 2021). Das et al. (2015) show that using sanitary pads halves the odds of suffering infections, and recent causal evidence from school settings shows that providing sanitary pads reduces school drop-out by 25 percent (Agarwal et al., 2022) and absenteeism by 50

[1]While Ichino and Moretti (2009) propose that the menstrual cycle explains higher female absenteeism using data from an Italian bank and Schoep et al. (2019) document absenteeism and productivity losses in a nation-wide survey in the Netherlands, Herrmann and Rockoff (2012, 2013) do not find similar effects using data on teachers in the U.S.A.

percent (Benshaul-Tolonen et al., 2021). However, similar rigorous evidence for working women is missing even though the effects of hygienic MHM on working women may be just as profound. Working hours may be longer and the work be more straining than school attendance, leading to potentially greater risk of infection and suffering from unhygienic and uncomfortable menstrual materials. Working women may also be more exposed to male colleagues and supervisors, elevating fears of leakage and associated stigma (Krenz and Strulik, 2021). Different local organizations in Bangladesh estimate that between 30 to 70 percent of absent days among female garment workers are due to poor MHM (Paul-Majumder, 2003; IBRD, 2011; WSSCC, 2013; SNV, 2014). However, the effects of improved MHM on work absenteeism could also be muted, particularly in low income settings, if women do not get paid for missed days at work, and go to work even when suffering the effects of poor MHM.

In this paper, we study how relieving constraints to hygienic MHM affects menstrual practices, health and well-being, and labor outcomes using a randomized controlled trial with Bangladeshi female garment workers. To the extent that improved MHM reduces absenteeism and worker turnover, it may also benefit employers. Garment factories in Bangladesh, which employ a large share of the female workers, suffer from absenteeism and turnover which disrupt production processes and lead to loss of factory-specific production knowledge (Menzel and Woodruff, 2021; Impactt, 2013). In the Netherlands, Schoep et al. (2019) document that menstruation related absenteeism corresponds to on average 1.3 lost working days per woman per year, and presenteeism, i.e., reduced productivity due to feeling unwell while at work, to another 8.9 lost working days.

Despite the potential benefits, the use of hygienic menstrual products, such as sanitary pads, is not widespread.[2] This is usually attributed to lack of knowledge about their

[2]The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, 2014) estimates that in Bangladesh disposable pads, or other hygienic products, are used by only one quarter of adult women.

benefits and to their high costs (van Eijk et al., 2016; Garikipati and Boudot, 2017), but existing studies do not address information and financial constraints to product adoption separately, or how they interact (Oster and Thornton, 2011; van Eijk et al., 2016; Benshaul-Tolonen et al., 2020, 2021). Further, they ignore that lack of information also limits the effectiveness of traditional technologies. For example, hygienic use of reusable cloth, a popular traditional absorbent, requires drying it outside after washing it, due to the disinfecting properties of the sun's UV light. Yet, this is often not done due to widespread taboos surrounding menstruation (Nemade et al., 2009; Arora et al., 2013; ICDDR, 2014).

We exogenously relax both information and financial constraints to hygienic MHM individually and jointly in a randomized controlled trial with around 1,900 low-income, female workers from four Bangladeshi garment factories. Our *Info* treatment comprises attendance at a one-hour information session on menstrual health led by an expert local NGO. Importantly, the sessions stress that hygienic MHM can involve both the use of novel products such as disposable sanitary pads, or traditional material, such as reusable cloth, if used hygienically. Our *Pads* treatment provides a monthly ration of hygienic disposable pads for around half a year. Finally, our *Pads & Info* treatment includes both. We first analyze how our interventions affect workers' use of sanitary pads and their MHM knowledge and practices, including the use of traditional MHM materials like reusable cloth. We then study effects on health outcomes, such as urinary tract infections and well-being, using detailed survey data, and finally effects on labor outcomes, such as work absenteeism, earnings, and worker turnover, using administrative personnel data from the factories.

Our setting is ideal for several reasons. First, the Bangladeshi garment sector employs a predominantly female workforce and our study addresses both major operational constraints of this important sector and health needs of its more than two million female workers. Second, women in our sample have limited access to accurate information and hygienic men-

strual products, and there is scope for improvement of both: Only 42 percent use disposable sanitary pads at baseline, while the rest use traditional menstrual materials such as reusable cloth.[3] Only nine percent of our surveyed workers agree that menstruation is a regular body function and only around half know how to treat traditional material, such as cloth, hygienically. At most 10 percent actually treat traditional material hygienically. Finally, workers report infections, reduced well-being, and fears due to stigma associated with menstruation, suggesting that better MHM could improve well-being and labor outcomes in our setting.[4]

We find that both treatments are successful in relaxing constraints: Providing free sanitary pads increases reported pad usage by around 17 percentage points (23 percent), and providing information increases the share of workers answering key MHM questions correctly six months after the sessions were held by around six percentage points (nine and 65 percent, depending on the knowledge question). Information also leads to improvements in traditional MHM practices, such as drying cloth outside after washing, but not to increased pad use. Second, we find positive effects of broadly similar size of both treatments on worker health, as measured through self-reported symptoms of urinary tract infections. However, there is no additional effect when both treatments are provided jointly. Third, despite improvements in health outcomes, we do not find effects on self-reported well-being at work, or on work absenteeism, earnings, or turnover. Based on our confidence intervals, we can rule out that our treatments reduce absenteeism by more than a quarter, or increase earnings by more than two percent.[5] While the confidence interval includes substantial reductions for

[3]In line with that, the NGO SNV reports that 40 percent of workers use pads in a study in 20 Bangladeshi garment factories (SNV, 2016). Another study by the NGO BSR similarly reports that 60 percent of female garment workers use left-over rags they find in the factories as absorbent (WSSCC, 2013).

[4]Indeed, 15 percent of workers report suffering from UTIs, 63 percent fear leakage of their absorbents and 42 percent worry that male co-workers would be disgusted or tease them if they knew they had their period.

[5]Minimum detectable effects, after multiple hypotheses adjustment, are similarly 31 and 1.7 percent changes for the two outcomes.

absenteeism, we can reject economically significant effects on worker earnings, a crucial labor outcome for worker welfare. As mentioned above, small reductions in absenteeism may be less surprising in this low-income setting where no wage is paid for missed days at work.

Our study contributes to three strands of literature. First, we contribute to a growing literature on the importance of improved MHM for economic outcomes in low income settings, which so far mainly focuses on educational outcomes among adolescent girls (see Montgomery et al. (2016) for a review). The evidence is mixed and seems to depend on the type of menstrual product. Provision of sanitary pads improves attendance among school girls in Ghana (Montgomery et al., 2012) and Kenya (Benshaul-Tolonen et al., 2021), and decreases dropouts and increases school-leaving exam performance among girls in India (Agarwal et al., 2022). No improvements are found for menstrual cups in Kenya (Benshaul-Tolonen et al., 2021) and Nepal (Oster and Thornton, 2011), partially due to a low baseline level of days missed at school in the latter study. A notable exception studying working women is Krenz and Strulik (2021); using propensity score-matching, they find less absenteeism among women using sanitary pads in Burkina Faso. To the best of our knowledge, we are the first to identify the effects of improved MHM on health and labor outcomes among working women using a randomized trial.

Second, we contribute to the literature on health behavior, in particular in low-income countries (see Dupas (2011b) for an overview). This literature has documented inadequate health behavior and identified information and financial constraints as key limiting factors.[6] However, the evidence is mixed on whether information and potential

[6]Financial constraints are revealed by very price-elastic demand for preventative health care, e.g., for deworming medication (Kremer and Miguel, 2007), bed nets to prevent malaria (Cohen and Dupas, 2010), and water-filters to prevent water-borne diseases (Ashraf et al., 2010). Meanwhile, providing information on unsafe drinking water helps to avoid these water sources (Madajewicz et al., 2007; Jalan and Somanathan, 2008) and information on the risk of HIV infections leads to a substantial reduction in teen pregnancies (Dupas, 2011a).

changes in health behavior actually lead to health benefits.[7] We systematically disentangle the roles of information and financial constraints to hygienic MHM and find that alleviating both constraints improves health outcomes. However, they are strategic substitutes and work through different channels: Removing financial constraints increases adoption of new health products, in our case sanitary pads; while removing informational constraints improves traditional health practices, the more hygienic use of reusable cloth in our case. Our results imply that improving traditional health practices may be a less costly way to improve health outcomes than advertising new health products, and at least as effective.

Last, we speak to the literature on the effects of poor health and of preventive health measures on labor outcomes (see Dupas and Miguel (2017) for an overview). Fink and Masiye (2015) and Dillon et al. (2021) show that reducing exposure to, or better identifying and treating, malaria increases agricultural production and workers' earnings, respectively. Adhvaryu et al. (2022) show that exogenous variation in air pollution in garment factories in India decreases worker productivity. However, this work suffers from difficulties in measuring output accurately, in particular in agriculture (Fink and Masiye, 2015), in providing access to health care (Dillon et al., 2021), or in observing endogenous health behavior in reaction to exogenous changes in health risks (Adhvaryu et al., 2022). Our design allows us to overcome these shortcomings: We exogenously vary access to health care, we can measure labor outcomes accurately with administrative data for each worker, and we elicit changes in individual health behavior and whether these translate to changes in labor outcomes. We find no statistically significant effects on labor outcomes.

[7] While Haggerty et al. (1994) find that promoting hand washing reduces diarrhoeal diseases, Galiani et al. (2016) find that information improves knowledge, but not health outcomes.

The remainder of the paper is organized as follows: In Section 2 we present the background, data and sample of our study, in Section 3 the experimental design, and in Section 4 our results. Robustness checks are presented in Section 5, while Section 6 concludes.

2 Background, Data and Sample

2.1 Background

The Bangladeshi garment sector is the second largest in the world with more than 4,000 factories employing more than four million workers, of whom more than 50 percent are female (McKinsey, 2011; Heath and Mobarak, 2015; Farole et al., 2017; Menzel and Woodruff, 2021). Garment factories suffer from worker absenteeism and turnover, which disrupt their production processes and lead to loss of factory-specific production knowledge: Menzel and Woodruff (2021) find daily absenteeism rates of four percent and annual turnover above 30 percent in a sample of 60 garment factories, while Macchiavello et al. (2020) report absenteeism rates of 6.5 percent in a sample of 24 factories.[8] Garment workers typically start working in the sector at the age of 18, and female workers largely leave the sector before they turn 30. Starting wages are around US$ 70 to 90 per month to work for six days per week and eight to twelve hours per day, depending on overtime worked, and an experienced sewing machine operator can earn up to around US$ 150 per month.

For this trial, we work with four factories in Bangladesh which employ around 1,000 to 2,000 female workers each. Two factories nominated 200 female workers each for the trial,

[8] Adhvaryu et al. (2021) report even higher daily absenteeism of around 10 percent for Indian garment export factories with a comparable setup to ours. Impactt (2011), Impactt (2012), and Impactt (2013) report similarly high turnover rates from Bangladeshi, Indian, and Chinese export factories. See Robert and Shaw (2022) and Friebel et al. (2021) for discussions of the negative effects of worker turnover on firms.

while the third nominated 600, and the fourth around 900.[9] The trial was implemented in two phases due to logistical reasons. At the first three factories, which together nominated 1,000 workers for the trial, free pads were distributed from October 2018 to May 2019 (Phase 1), while at the fourth, they were distributed from October 2019 to March 2020 (Phase 2).

2.2 Data

Our data come from two sources: Administrative personnel records and surveys. First, the factories provided monthly records for each worker on the number of days workers were sick, absent for other reasons, and their pay (adjusted for overtime and absenteeism). We obtained administrative data from half a year before our intervention until around one and a half year after, until March 2020 for Phase 1 and until February 2021 for Phase 2. Second, survey data were collected from all workers in a baseline survey before the intervention and in an endline survey after six months of pad distribution. In Phase 1, surveys were done in person at the factory. In Phase 2, while baseline surveys were done in person at the factory, endline surveys were done by phone due to the onset of the Covid-19 pandemic.

2.3 Sample

Table 1 summarizes characteristics of the 1,577 female workers who form the main sample for our analyses, as all core outcomes are available for them.[10] Workers are on av-

[9] In the first three factories, only a subset of female workers participated in the trial. From Factory 1 (200 nominated workers) and Factory 3 (600 nominated workers) we have administrative pay data from all workers in the factory, allowing us to study if factories selected workers for the trial along specific dimensions. We do not find nominated workers to have different earnings, absenteeism rates or factory tenure.

[10] We did not manage to reach 12.9 percent of our initial 1,885 workers for the endline survey, and data recording issues led to some core outcome variables being missing for another 3.4 percent of workers. As discussed in more detail in Section 5, attrition from the original to the main analysis sample is not correlated with the randomly assigned treatment status.

erage 26 years old and report to have spent 6.1 years in school. Eighty-five percent report to be married and 69 percent to have children. Our sample is comparable with respect to these characteristics to a randomly drawn sample by Menzel and Woodruff (2021) of around 1,600 female sewing operators from 60 other factories in Bangladesh. Based on administrative data from the factories, at baseline they earn on average 9,305 BDT per month including overtime pay, or around US$ 110, and miss on average 0.5 days of work each month without excuse (being "absent") and another 0.1 days with medical excuse ("sick leave").

The use of hygienic menstrual health practices and knowledge on menstrual health is limited: 42 percent report to use sanitary pads regularly at work, while 54 percent report to have never used them, with the remaining four percent reporting to having used pads sometimes. Respondents who are using pads are more educated (p-value < 0.01), younger (p-value < 0.10) and less likely to have children (p-value < 0.05).[11] The main self-reported reasons for not using pads are that respondents were used to other absorbents or just never tried out pads (68 percent) and that pads were too expensive (33 percent).[12]

With regard to knowledge on menstrual health and hygiene, only around nine percent answer that periods are a natural phenomenon affecting women as opposed to an illness, curse, or an unreasonable body function. Looking more closely at knowledge about hygienic use of traditional materials like cloth, only 52 percent agree that reusable cloth should be dried outside after washing, which is widely recommended, due to the disinfecting properties of the sun's UV light. At baseline, only six percent report following this practice always or often. On the other hand, we do not detect a significant lack of knowledge about dispos-

[11] P-values based on regression coefficients from regressing pad use at baseline on worker characteristics.

[12] Respondents could give multiple answers and other reasons were that respondents are not comfortable buying pads (14 percent), or pads are not comfortable to use (10 percent).

able pads: 95 percent correctly state that disposable sanitary pads cannot be reused. Similarly, 97 percent correctly state that using sanitary pads helps to avoid fungus or other infections.

Workers report several consequences of menstruation: 12 percent of workers missed work in the past 12 months due to menstrual pain, three percent due to a lack of adequate menstrual products, and two percent due to period related sense of shame or embarrassment. These values may represent a lower bound to the true extent of menstrual health related absenteeism, given that the surveys were done on factory premises.[13] Menstruation does negatively affect subjective well-being at work: 81 percent of workers agree or completely agree with feeling more tired at work during their period, 74 percent with reaching work targets being more difficult, or 63 percent with worrying that their absorbent leaks during work.

3 Experimental Design

Our randomized trial is based on two cross-randomized treatment arms resulting in a simple 2×2 design with four treatment groups: The first treatment group, the *Pads* treatment, offered access to a monthly ration of free sanitary pads for eight months.[14] Workers with access to free sanitary pads received a voucher card and could collect the pads from distribution workers stationed in the "medical rooms" of the factories on distribution days during the intervention period. These rooms were chosen because they are well known

[13]Note however, that no factory staff was allowed into the surveys rooms at the factories, and workers were informed that no information at the individual level would be shared with the factory management in order to guarantee their privacy. Meanwhile, as discussed in the introduction, reports by local organizations suggest a sizable share of absenteeism due to inferior menstrual products (WSSCC, 2013; SNV, 2014).

[14]We limited the number of free pads a worker could collect to one pack of eight pads per month, to reduce the possibility of workers sharing pads with others, which would cause spillovers effects that could bias the estimates of the treatment effects. Workers using pads at baseline in Phase 1 report that they use on average 8.8 pads per period. The duration in which we distribute pads had to be shortened by two months in Phase 2 due to the nationwide shut-down in response to the Covid-19 pandemic.

by the workers and close to their workplace, and provide privacy for the workers. To keep the number of collection days proportional to eligible workers per factory, pads could be collected on two, four, and six days in factories with 200, 600, and 900 workers, respectively. We hypothesize that our *Pads* treatment relaxes financial constraints to increased use of pads, resulting in reduced infections, increased comfort and subjective well-being and, potentially, improved worker absenteeism and earnings. Further, worker turnover may be reduced, due to improved health or workers' appreciation of the free pads.

The second treatment, the *Info* treatment, comprised attendance at a one-hour information session conducted by female staff of an expert local NGO, with expertise in our setting. The sessions were held during the first month of pad distribution at each factory, they took place during work time, and around 20 workers attended each of them. The sessions informed on what causes menstruation, stressed the importance of hygienic menstrual health management, and provided advice for remedies against period pain. Both the use of novel menstrual health products like disposable pads and the proper use of traditional materials such as reusable cloth were covered. Regarding the first, information on their correct use, hygiene, comfort and superior absorbency was provided. Regarding the latter, it was stressed that reusable cloth needs to be washed with water and detergent, and dried in the sun. Often, women do not follow this practice due to social stigma and taboos that portray menstruation and menstrual blood as unnatural and harmful if seen by others (Kumar and Srivastava, 2011; Garikipati and Boudot, 2017; Mohamed et al., 2018). We expect that our *Info* treatment relaxes information constraints on MHM, which may either increase the adoption of pads, leading to similar downstream effects on labor and health outcomes as the *Pads* treatment, or it may improve the hygienic use of traditional material, such as reusable cloth, which may also improve these outcomes.

The third treatment group, the *Pads & Info* group, received both treatments. The interaction of both interventions helps us to understand whether information and pads are strategic complements or substitutes for improving MHM and downstream health and labor outcomes.[15] The fourth group is the *Control* group that neither received information nor access to free pads. All workers who did not receive access to free pads received a placebo present of comparable value to counteract any potential wealth effect on our outcomes. Randomization into the four groups was done on the worker level, stratified at the factory level.[16]

Treatment Uptake

The uptake of the information treatment was near perfect, as the factory management instructed workers randomized into this treatment to attend them, and with the time spent in the sessions counted as paid work-time. The take-up of the offered free pads among eligible workers is shown in Figure 1. The four lines show which share of eligible workers at the four participating factories collected their package of pads each month of the distribution period. Collection rates differ per factory: While at Factory 1, 3 and 4, which contributed a combined 90 percent of the workers in the sample, collection rates in the first six months of the intervention are above 70 percent, they are less than 30 percent at Factory 2.[17]

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[15]This is reflected in our empirical model, where the treatment indicators are defined along treatment arms instead of the treatment groups: *Pads* is equal to one if a worker was assigned to receive pads, i.e. in the *Pads* or *Pads & Info* group, and zero otherwise, *Info* is equal to one if a worker was assigned to participate in the information campaign, i.e. in the *Info* or *Pads & Info* group, and *Pads* $\times$ *Info* is the interaction effect on top of the effects of the individual treatment arms.

[16]The trial was registered at socialscienceregistry.org under RCT ID AEARCTR-0003298, together with a pre-analysis plan. Our analysis largely follows the pre-analysis plan. Appendix C describes small deviations from the plan in more detail, and shows pre-specified analysis not discussed in the main text.

[17]We can only speculate why collection rates at Factory 2 were lower. Despite careful planning involving both workers and factory management, the management suspected after the trial that collection location and times were after all not convenient for the workers. The drop in collection rates at Factory 1 in December is

Experimental Balance

Our sample is well balanced on observable baseline worker characteristics. Table 1 reports the differences of the variable means in the three treatment groups to that of the control group, plus p-values from an F-test on whether the means differ jointly from that in the control group. Among the 38 variables, the treatment groups jointly differ at the one percent level for one variable, and at the 5 percent level for a further variable, which we would expect under random assignment. F-tests also do not reject the null-hypotheses of joint orthogonality of the worker-level variables and the treatment groups (see bottom row of Table 1).

4 Results

We present three sets of results: First, we show that free pad distribution increases pad use rates, while information increases MHM knowledge and leads to more hygienic use of traditional MHM materials. Second, we show how the treatments affect worker health and well-being. Finally, we test if these effects trickle down to labor outcomes.[18]

due to unrest in the industrial area surrounding this factory, and the factory was closed for more than a week. Data from this factory-month is excluded in the subsequent analyses of the administrative data. As stated above, distribution of pads at Factory 4 stopped after six months due to the onset of the Covid-19 pandemic.

[18]The substantial number of outcomes we present, as well as our three treatment groups, warrants adjusting the p-values of treatment effect estimates for multiple hypotheses testing. We do so by first creating indices for latent outcomes that we measure with multiple outcome variables, such as worker health, well-being or MHM behavior. We then present in Table B.1 sharpened FDR q-values (Benjamini et al., 2006) that adjust the p-values for our three treatment groups for the outcomes of pad adoption; indices for MHM knowledge, MHM behavior, worker health, and worker well-being; and for absenteeism, earnings, and turnover. We also include long-run pad adoption in the adjustment, an outcome we discuss at the end of the results section. Thus we adjust the p-values for three coefficients times nine primary outcomes, or 27 primary tests. Note that we include the p-values for the difference in average outcomes between the *Pads & Info* and the control group (always reported at the bottom of each table) instead of the p-value of the interaction effect, as we are primarily interested in whether workers in any treatment group have different average outcomes than workers in the control group.

4.1 Menstrual Health Practices and Knowledge

Pad Adoption

We start by studying whether provision of free pads, information, or both, leads to increased self-reported use of pads.[19] Column 1 of Table 2 shows that workers randomized into our *Pads* treatment are 17.2 percentage points (22.8 percent) more likely to use pads at endline compared to the control group, while workers who only attend the information session are only a statistically insignificant two percentage points more likely to use pads. The interaction effect of the two treatments is exceedingly small (0.5 percent).[20] The results control for a battery of worker characteristics as lined out in the notes of the table, including baseline pad use. As expected, the results are driven by workers who report to not having used pads at baseline (Column 2, Table 2). Among these workers, those with free access to pads are 28 percentage points (46 percent) more likely to report using pads at endline. Thus, financial constraints, but not information constraints seem to limit pad use.

Knowledge Gains

Next, we study how our treatments affect aspects of MHM knowledge discussed in the information sessions as elicited in the endline survey, see Table 3. Following our pre-analysis plan, we only analyze outcomes in which less than 95 percent of respondents gave the same answer, leaving us with two outcomes: Whether periods are a natural phenomenon and not signs of some illness or curse (Column 1), and whether it is important that reusable cloth is dried in the sun after washing (Column 2).

[19]Pad use was asked on a four-point Likert scale, but to better interpret our results, we define a dummy taking value one for workers using pads "always" or "often", and zero for "sometimes" or "never". Our results are robust to using the four-point Likert measure directly, using ordered probit estimation.

[20]The coefficients on the effect of the *Pads & Info* treatment *relative to the control group* are always stated at the bottom of the table, next to their p-values.

Workers who only received the information are 6.3 percentage points (65 percent) more likely to agree that periods are a natural phenomenon, and 5.5 percentage points (10 percent) more likely to agree that reusable cloth needs to be dried outside. We also find a similar effect on the first question for workers who received pads, but not on the second question, while we find the opposite pattern for those who received both treatments (see bottom rows of Table 3). Finally, on an equally weighted summary index over the two knowledge questions, we find significant effects for those who received the information or both treatments.

Health Behavior

We next test whether the knowledge increases among workers who participated in the information sessions also lead to adoption of recommended practices, particularly on the hygienic treatment of reusable cloth. While we find positive but statistically insignificant effects of participating in the information sessions on washing cloth (Column 1 of Table 4), we find a highly significant effect on the self-reported likelihood of drying reusable cloth outside in the sun (Column 2). Workers who participated in the sessions are 92 percent more likely to do so, against a control group mean of 10.3 percent. We see a negative interaction effect of the two treatments on drying cloth in the sun. However, the share of workers who dry cloth in the sun is still 5.8 percentage points higher among workers in the *Pads & Info* than in the control group, with a p-value of the difference of 0.012, as shown in the bottom rows of Table 4. While they differ in magnitude, the effects of *Info* and *Pads & Info* cannot be distinguished statistically. Finally, on an equally weighted index of the two behavior variables we obtain very similar positive and significant effects of the information treatment as we do on the drying pads outside variable (Column 3).

All of the significant effects on pad adoption, knowledge gains and health behavior remain statistically significant after multiple hypotheses adjustment, as shown in Table B.1.

Meanwhile, we see no "cross-effects" of free pads on knowledge or traditional practices, or of information provision on pad use. It thus appears that relaxing information constraints fosters hygienic traditional MHM practices while relaxing financial constraints is sufficient to increase the use of novel products. We next test whether the increased used of sanitary pads by workers receiving free pads, or the improved use of traditional methods in the information treatment, affects worker health and well-being.

4.2 Worker Health and Well-being

Urinary Tract Infections

We test for effects on worker health by focusing on one of the biggest health risk of inadequate menstrual health care, Urinary Tract Infections (UTIs) (Ahmed and Yesmin, 2008; Sumpter and Torondel, 2013; Das et al., 2015; Kaur et al., 2018). We asked workers from Factories 1 to 3 (Phase 1) and Factory 4 (Phase 2) slightly different questions about UTIs. In Phase 1, we asked workers whether they had any UTI in the last half year, and if yes, how many days of work they lost due to this. Recognizing that workers may have had UTIs without being aware of it, we asked in Phase 2 instead for three common symptoms of UTIs: pain while urinating, unusual smell of urine, or having to go to toilet more frequently. We show the effects of our treatments on these five outcome variables in Columns 1 to 5 of Table 5. Both our treatments have negative point estimates on the occurrence of UTIs and all the associated symptoms, except for number of work days lost. However, only for occurrence of UTIs, and urinating more often (Columns 1 and 5), are the coefficients statistically significant, particularly for the information treatment, reducing their incidence by around 50 and 39 percent.

We create again an index over the five outcomes, following Anderson (2008). As shown in Column 6 of Table 5, both treatments have significant effects, reducing the index

by 0.132 standard deviations for *Pads* and by 0.148 standard deviations for *Info*. Both effects remain statistically significant at the ten percent level after multiple hypotheses adjustment (Table B.1).[21] However, both treatments do not complement each other: Their interaction effect is almost exactly offsetting the reduction in UTIs by *Pads*, suggesting that using modern MHM products and traditional MHM materials hygienically are strategic substitutes.

Self-reported Well-being

Table 6 shows the results on nine questions asked on subjective well-being at work during the days of their period. The first five outcomes reflect physical well-being other than infections: whether workers feel more tired (Column 1), struggle more to reach work-targets (Column 2), feel more energetic (Column 3), miss work due to menstrual pain (Column 4), and are more easily irritated (Column 5) when they have their period. Meanwhile, Columns 6 to 9 measure effects on psychological outcomes related to stigma surrounding menstruation: whether workers feel more ashamed (Column 6), worry about leakage of the absorbent (Column 7) or odor (Column 8), and feel more alone (Column 9) during their period. We do not find effects on these outcomes, and neither on an Anderson index aggregating the nine outcomes, as shown in Column 10 of the table. All outcomes in this table are coded such that positive coefficients imply higher well-being. The absence of effects on well-being may be surprising given the significant effects on UTIs shown in the previous subsection. These well-being measure may be, however, rather complementary to physical health, as captured by UTIs. For example, feelings of tiredness, or irritation, may

[21]Given that we asked different sets of questions on UTIs in Phase 1 and 2, we first create Anderson indices separately for the data from each phase, and then combine the two indices to one index variable stretching both phases. As workers differ on many observed characteristics between Phase 1 and 2, as shown in Table B.2, we show in Table B.3 the results on the (separately constructed) indices in the separate sample of each phase. The treatment effects are very similar, though lose statistical significance in the smaller sub-samples.

occur even if graver health risks such as UTIs are reduced. In the next section, we will study whether the effects we found on more hygienic MHM and reduced UTIs translate into less absenteeism at work, increased earnings, and higher retention with the current employer.

4.3 Labor Outcomes

We expect any effect of our treatments on the variables from the administrative HR records to be subtle. Therefore, for increased precision, we use difference-in-differences specifications to estimate effects of our treatments on monthly worker absenteeism and earnings from the administrative HR records. We use six monthly rounds of data from before the start of our treatments and 16 monthly rounds after, controlling for worker fixed effects as well as factory-month fixed effects, and cluster standard errors at the worker level (the level of the random treatment assignment). To analyze the effects of our interventions on whether workers leave the factory within 16 months of the start of the treatment, we use a Cox proportional hazard model that estimates differences in the odds ratio of workers exiting in the different treatment arms.

As shown in Table 7, both treatment arms show positive coefficients for earnings and negative coefficients for absenteeism. Only the *Info* treatment shows a marginally statistically significant increase in earnings by around one percent. However, the effect loses statistical significance at conventional levels when adjusting for multiple hypotheses testing (Table B.1). Figures A.1 and A.2 show monthly estimated differences in worker absenteeism and earnings between the three treatment groups and the control group, confirming no clear improvements in these outcomes. Finally, we also do not find any statistically significant effect on workers leaving the factory.

4.4 Discussion of Results

Our results indicate that our two treatments lead to different behavior changes among our trial participants. Relaxing financial constraints leads women to adopt modern pads, while relaxing information constraints leads women to be more knowledgeable about MHM and to use traditional cloth more hygienically. While both observed changes in health behavior translate into similar improvements in health, as measured by UTI incidence, they seem to be strategic substitutes. Yet, fostering the hygienic use of traditional MHM material is more cost-effective: While an information session costs around US$ 2 per worker, offering access to free pads for six months costs around US$ 3 to 4 per worker. The improvements in health outcomes, however, do not trickle down to labor outcomes.

The provision of pads and information reduces absenteeism by 7.2 and 9.5 percent, respectively, though the effects are not statistically significant at conventional levels. Ex-ante power calculations, based on data from Menzel and Woodruff (2021) from 60 factories in Bangladesh, suggested minimum detectable effects (MDE) of 15 percent reductions in absenteeism (18 percent after multiple hypotheses testing adjustments (MHT)) with our sample size. This was well in line with our expectations: If our treatments had halved MHM related absenteeism as suggested by previous research (Das et al., 2015), and if the share of MHM related absenteeism were 40 percent as suggested by our preparatory fieldwork and the grey literature (indicating a share of 30 to 70 percent (SNV, 2014; WSSCC, 2013)), we would have been able to detect such a reduction. Ex-post MDEs, based on the standard errors from Table 7, turned out larger than those estimated ex-ante, at 26 and 31 percent before and after MHT, respectively, mainly due to control group absenteeism being 35 percent lower in our factories than in the larger sample from Menzel and Woodruff (2021).[22]

[22]However, as our workers are very similar to those from this larger sample in terms of income or education, baseline levels of absenteeism *due to MHM* may be more similar between these samples. Forty

For earnings, based on the same sources, we have ex-ante and ex-post MDEs of 0.9 and 1.7 percent, respectively, after MHT. Our *Info* treatment increased earnings by 0.91 percent, marginally significant before MHT, and somewhat short of the ex-post MDE. We show ex-post MDEs for all outcomes in Table B.4, as well as Minimum Rejected Effects (MREs), i.e. the upper limit of the 95 percent confidence intervals of the treatment effect estimates. For absenteeism, we can reject reductions of 26.6 and 27.9 percent relative to the control group for the *Pads* and *Info* treatment, while for earnings, we can reject increases of 1.1 and 1.9 percent, respectively. While confidence intervals on our effect estimates on absenteeism include larger values than anticipated, they exclude economically meaningful effects on worker earnings, i.e. of two percent or more, which is arguably the core labor outcome of interest from a worker welfare perspective.

There are three potential explanations for why effects on labor outcomes are small. First, an improvement in one particular health dimension like UTIs, even if important in its own right, may not be sufficient to reduce absenteeism, or increase earnings, to an extent we are powered to detect. As shown in Table 6, we do not find effects on other channels than reduced infections, such as improved well-being or reduced exposure to stigma. Despite its prominence in the literature, the infection channel may not have been powerful enough on its own to induce detectable effects. Second, the costs of missing work are high for workers, as they do not get paid for absent days. Given the relative poverty of the workers, their marginal valuation of money may be high, possibly inducing them to miss as few days as possible due to period problems already at baseline. Finally, our first stage effects, particularly on pad adoption, may be limited in size, notwithstanding their statistical significance, due to a sizeable increase in pad use also among workers in

percent of absenteeism due to MHM in the larger sample, or 1.5 days per month, would be 62 percent of overall absenteeism observed in our factories, implying that a halving of that rate would meet our ex-post MDE.

the control group (see Section 5.4 for more details). This may reduce the strength of effects on labor outcomes further down the causal chain that the treatments may generate.

4.5 Longer-run Pad Adoption

We implemented another round of phone surveys in June and July 2020, in which we surveyed 456 workers out of the original sample of 1,885 workers that we tried to re-contact. We reached between 106 and 123 workers from each of the treatment and control groups.[23] This allows us to study how sustainable our treatment effects on pad use are several months after the provision of free sanitary pads has ceased.

The results are shown in Table 8. While the coefficients of the two individual treatment arms are positive, none of them is statistically significant. However, workers who received both treatments are significantly more likely to still use pads than those in the control group, as indicated by the p-value for this difference shown in the bottom row of Table 8, which remains significant after multiple hypotheses adjustment (Table B.1). We see an equivalent reduction in the use of other materials than pads in the combined treatment group (Column 2). Once financial constraints are no longer relaxed, workers only continue to use pads if they also received information on their benefits.[24] This suggests that expert knowledge as provided by the teachers in the information sessions, and knowledge obtained through own experimentation with free pads are complements.[25] Moreover, it implies that

[23]The workers who we reached were on average 8 months older and 3.6 percentage points more likely to be married than those we did not reach. They are not significantly different with respect to baseline pay, education level, parental status, or MHM knowledge. Furthermore, Table B.5 replicates Table 1 on the sample we reached in the long-run survey, and does not show imbalances in observables across treatment groups in that sample, or in the share of workers re-surveyed from each group.

[24]As shown in Column 3 of Table 8, the effects on pad adoption in the short run are very similar in the sample we reached for the long-run survey as in the overall sample, which is shown in Column 1 of Table 2.

[25]Other health products, such as bed nets, have also been shown to be experience goods (Dupas, 2014).

removing financial constraints is important as it allows women to experiment with sanitary pads. This is in line with Agarwal et al. (2022) who suggest that continued subsidies for modern sanitary products are only needed for poor households.

5 Robustness Checks

5.1 Spillover Effects

One concern for the estimation of treatment effects are spillover effects between workers from different treatment groups. If spillovers improve outcomes of control workers relative to treated workers, they would induce downward biases in our treatment effect estimates. We could test for such spillover effects if we assume such spillovers to be stronger between socially connected workers. We therefore collected information on social connections among all workers in the baseline survey of Phase 2.[26] Based on this network data, we create a dummy indicating whether a worker has any social ties to any treated worker, which is the case for 68 percent of workers, including 67 percent of control group workers.

As shown in Column 1 of Table B.6, we find that control workers with social ties to treated workers are an insignificant four percentage points less likely to report using pads at endline than other control workers. In Column 2, we test whether the type of treatment that connected workers receive matters. We find that workers who only receive information, and are connected to other workers who either receive only information, or only pads, have a higher pad adoption rate than workers in the same treatment group without such connec-

[26]We used a novel incentivized method to collect network data in a setting where workers may have difficulties to provide enough information to identify connected workers in a worker rooster. Workers received a form in which they could note up to three workers, including their phone numbers, who would receive 10 BDT mobile phone top-up credit each. The form had to be submitted to designated letter boxes in the factory and participation was incentivized by the same top-up phone credit for the worker submitting the form.

tions. However, we do not see such an effect for workers in this group connected to others who receive both treatments. Given the large number of coefficients in this specification, we do not want to overinterpret isolated significant coefficients, as they may be spurious. Overall, we conclude that we do not detect strong evidence for the presence of spillover effects.

5.2 Attrition

We have an overall attrition rate of 12.9 percent from baseline to endline survey. Attrition is slightly higher in Phase 2 (13.9 percent vs. 12.0 in Phase 1), in which we had to conduct the endline surveys by phone due to the onset of the Covid-19 lockdown. As mentioned already in Section 2.3, data collection issues prevent us from having all core outcome variables for an additional 3.4 percent of workers, which we also consider attrited from our core sample. As shown in the first row of Table B.7, attrition rates do not differ significantly across our three treatment groups. The remainder of the table, which replicates Table 1 on the sample of attrited workers, shows that attrited workers who come from different treatment arms do not look different from attrited workers from the control group.[27]

5.3 Desirability Bias in Survey Responses

Our survey data based results may be affected by desirability bias among workers when being interviewed. We address this concern by collecting the necessary information in the baseline surveys of Phase 2 to construct a desirability score following Crowne and Mar-

[27]Overall, attrited workers are younger, earn less, and are less likely to be married and to have children at baseline, compared to workers that did not attrit. This reflects that younger workers in the industry tend to move more between factories. However, as mentioned above, these characteristics are not differentially correlated with attrition status in the treatment and control groups, which would be the key threat to unbiased estimation of treatment effects, at least for the respondent population (Ghanem et al., 2021).

lowe (1960) and Dhar et al. (2022).[28] We then test whether estimated treatment effects based on survey responses are larger among workers with a higher desirability score. Table B.8 shows this analysis on our main five outcomes: pad use, knowledge index, traditional practices index, UTI index, and well-being index. We do not find significant interaction effects of the treatment with high desirability score, while the core results remain largely unchanged.

5.4 Repeated Survey Effects

Even the control group exhibits a large increase in self-reported pad use from baseline to endline survey, from 43 to 75 percent. This increase must be due to some combination of time trends in pad use, spillovers from treated groups, effects of going through the MHM baseline survey on subsequent pad adoption, and some form of desirability bias that is triggered by a second survey on MHM practices (the endline survey), after having already gone through the baseline survey (see Zwane et al. (2011); Dupas and Miguel (2017); Treurniet (2021) on the latter two effects).

To separate the first two from the latter two effects, in Phase 2, we randomly allocate 150 out of all the workers the factory nominated to solely participate in the endline survey. These workers, who should not be subject to the latter two effects, are 11 percentage points less likely to report using pads at endline than workers from the control group from Phase 2 (55 vs. 66 percent).[29] Meanwhile, among control workers, those with higher values on

[28]To construct the social desirability score we follow Dhar et al. (2022)'s approach, which is based on a short form of the Crowne and Marlowe (1960) module developed by Reynolds (1982). We elicit social desirability in several questions, construct an individual score as the average across these questions, and then classify individuals with a high desirability score as those whose score is above the sample median. The questions are reported in the notes of Table B.8.

[29]We had not created a random "outside group" in Phase 1. However, after the main endline surveys with the workers from these factories, we surveyed an additional 200 workers from these factories. As these workers were not randomly selected, we use propensity score matching to match them with control workers

the desirability score are 2.1 and 6.3 percent more likely to report using pads at baseline and endline, suggesting that repeated surveying of workers may strengthen desirability bias, though the increase is not significant. Finally, using the network data from Phase 2, we show in section 5.1 that connected control workers are four percentage points less likely to report using pads at endline (Table B.6, Column 1), speaking against spillover effects. Overall, this suggests that two thirds of the increase in control group pad use is due to time trends, and the rest due to (repeated) survey effects.

6 Conclusion

We study how health and labor outcomes are affected by improved menstrual health management based on an RCT with around 1,900 female garment workers in Bangladesh. Workers are randomly assigned to either attend an information session on hygienic MHM, receive access to free sanitary pads for around half a year, or both. Both treatments appear to be strategic substitutes in improving health but through different channels: While relaxing financial constraints allows women to adopt disposable sanitary pads, relaxing information constraints allows women to increase their knowledge and use traditional cloth hygienically.

Our results suggest two takeaways. First, information provision on hygienic use of traditional menstrual materials may be a cost-effective policy alternative to the promotion of modern products like disposable sanitary pads. We caution here that in our setting women can manage reusable products hygienically: All our women report having access to sanitary facilities, and over 80 percent report they can wash their menstrual cloth alone in private. In line with this, the positive effects of our information campaign seem to be driven by properly drying cloth in the sunlight after washing. While lacking access to sanitation facilities is a

from Phase 1 from their factory. In this matched sample, pad use is 13 percentage points lower than in the control group from Phase 1, similar to the 11 percentage point difference we find for Phase 2.

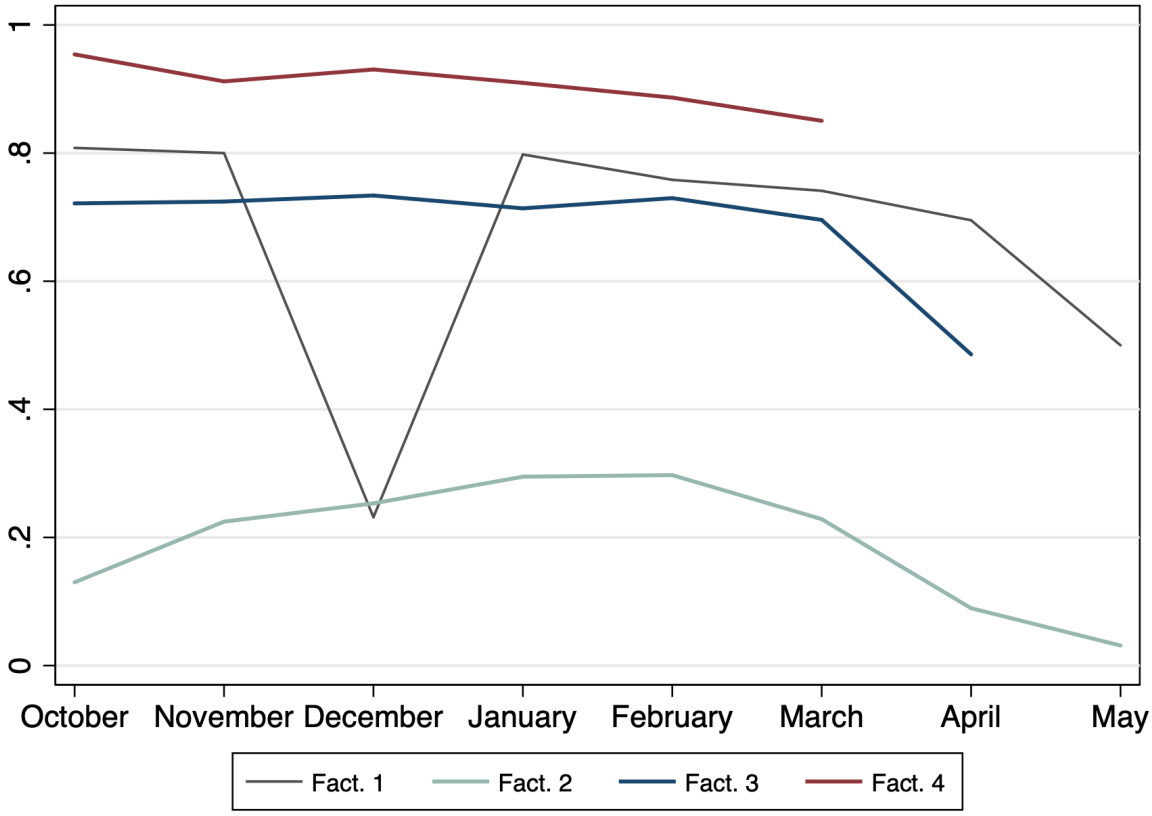
common problem in low-income settings (Guiteras et al., 2015), lacking information on the proper use of traditional hygiene material and practices may explain why just providing access to sanitation facilities does not always show expected health benefits (Patil et al., 2014).

Second, our comprehensive MHM intervention may only achieve limited effects on absenteeism in a work setting as compared to a school setting, in which recent studies find sizable effects on absenteeism, dropout, and performance (Benshaul-Tolonen et al., 2021; Agarwal et al., 2022). There are two possible reasons. First, the consequences of absenteeism in a workplace setting are immediate and severe - workers are not paid for days absent. The observed levels of absenteeism, even though disruptive to the operations of garment factories, may therefore be particularly difficult to reduce. Second, behavioral factors such as habits (Hussam et al., 2022) or salience and convenience (Ahuja et al., 2010) may be of greater importance at the workplace with relatively older women who may have gotten used to their preferred MHM practice, relative to school-girls who are just beginning to menstruate.

Finally, in the last years, sanitary pads have become increasingly available in Bangladesh and other low-income countries, including in remote areas. We see this trend also in the increased pad use in the control group of our trial from baseline to endline survey. While this may have reduced the effects our *Pads* treatment could have generated on downstream outcomes like absenteeism, our results on health outcomes suggest sizeable, yet unmeasured, improvements in women's welfare in the country due to this trend.

Figures

Figure 1: Share of Workers Collecting Pads



Notes: Figure shows the share of eligible workers (randomized into receiving free pads) who collected pads from the distribution workers at the four factories in each month. The number of eligible workers were 100, 100, 300, and 444 respectively at the four factories. The share is based on eligible workers who still work at the factory in the respective month. Factory 1 was closed in December for more than a week due to unrest in the industrial area surrounding this factory. Data from this factory-month is excluded in the analyses of the administrative data.

Tables

Table 1: Summary Statistics & Balance

	(1) Mean Overall	(2) Mean Control	(3) Diff. Pads	(4) Diff. Info	(5) Diff. Pads&Info	(6) F-Test
Survey Data:						
Age	26.17	26.07	0.033	0.269	0.213	0.873
Years Schooling	6.134	5.938	0.177	0.248	0.288	0.523
Married (0/1)	0.847	0.845	0.020	-0.009	-0.003	0.679
Children (0/1)	0.691	0.688	0.019	-0.006	0.002	0.872
Children Nbr	1.100	1.095	0.021	0.025	-0.013	0.938
Migrant (0/1)	0.734	0.720	-0.002	0.007	0.041	0.323
Live With: Total Person Nbr	2.051	2.064	-0.073	-0.014	0.063	0.368
Live With: Husband (0/1)	0.759	0.731	0.042	0.020	0.043	0.429
Live With: Mother (0/1)	0.181	0.203	-0.028	-0.014	-0.038	0.502
Live With: Father (0/1)	0.116	0.131	-0.035	-0.015	-0.006	0.437
Live With: Sister (0/1)	0.112	0.110	-0.004	0.017	-0.003	0.754
Live With: Brother (0/1)	0.099	0.097	-0.006	0.016	-0.000	0.723
Live With: Mother in Law (0/1)	0.094	0.097	-0.019	-0.004	0.012	0.492
Live With: Alone (0/1)	0.115	0.128	-0.025	-0.027	0.000	0.410
Live With: Bathshare (0/1)	0.443	0.409	0.047	0.033	0.050	0.465
Born Rural Area (0/1)	0.959	0.940	0.036***	0.002	0.036***	0.004***
Baseline Pad User (0/1)	0.418	0.425	-0.032	0.032	-0.027	0.223
Missed Work: Period Pain (0/1)	0.122	0.128	-0.005	-0.011	-0.005	0.969
Missed Work: No MHM Materials (0/1)	0.029	0.033	-0.000	-0.007	-0.007	0.830
Missed Work: Period Embarrasm. (0/1)	0.017	0.015	-0.002	0.010	0.002	0.566
At Work Dur. Period: Tired (Lickert 1-4)	1.797	1.819	-0.048	-0.020	-0.018	0.918
At Work Dur. Period: Target (Lickert 1-4)	1.990	2.033	-0.053	-0.048	-0.069	0.773
At Work Dur. Period: Shame (Lickert 1-4)	2.225	2.185	-0.008	0.063	0.102	0.371
At Work Dur. Period: Leak (Lickert 1-4)	2.249	2.239	-0.015	-0.016	0.052	0.794
At Work Dur. Period: Odor (Lickert 1-4)	2.417	2.422	0.002	0.012	-0.047	0.860
At Work Dur. Period: Irrit. (Lickert 1-4)	1.865	1.935	-0.127*	-0.083	-0.066	0.406
MHM Knowl.: Cause of Periods (0/1)	0.091	0.075	-0.012	0.021	0.055*	0.109
MHM Knowl.: Dry Pads Outside (0/1)	0.522	0.512	-0.010	0.013	0.021	0.557
MHM Knowl.: No Reuse of Pads (0/1)	0.954	0.941	-0.009	0.031	0.032	0.105
MHM Knowl.: Pads prev. Fung./Inf. (0/1)	0.974	0.961	0.010	0.017	0.023**	0.175
MHM Practice: Dry Cloth Outside (0/1)	0.057	0.048	0.030	0.024	-0.017	0.162
Adminstr. Data:						
Absent Days/Month	0.465	0.447	0.105**	0.026	-0.062	0.013**
Earnings (BDT/Month)	9,305	9,357	-66.73	-68.51	-36.86	0.820
Grade	5.120	5.060	0.154*	0.041	0.041	0.236
Sick Leave Days/Month	0.096	0.079	0.027	0.012	0.030	0.695
Attendance Bonus (BDT/Month)	451.5	447.9	-8.866	-6.286	19.55	0.147
Overtime Hours/Month	30.37	30.22	0.275	0.210	-0.115	0.715
Years in Factory	2.695	2.712	-0.050	-0.070	0.082	0.802
F-test (p-val):			0.40	0.85	0.11	

Notes: All statistics for sample of 1,577 workers from the core analysis sample, on which all main results are based. "Mean Overall" indicates mean of variable at baseline in the full sample, while "Mean Control" the mean among workers in the control group, and "Diff. ..." the difference of the mean in the respective treatment group to that of the control group. Column "F-Test" shows p-values for the joint significance of the three treatment group indicators from a regression of the variable on these three dummies and factory fixed effects. "F-Test (p-val)" in bottom row shows p-values from three different regressions, each from a sample combining workers from the control group and workers from the treatment group of the respective column. In that sample a dummy indicating that the worker is from the treatment group is regressed on all variables shown in the table, with the p-value referring to an F-test on the joint significance of all these variables. These regressions control for factory fixed effects, while for variables with missing values, an additional variable is included indicating missing values, and with the missing values set to zero. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Pad Use

	(1) Pad Use	(2) Pad Use
Pads	0.172***	0.280***
	(0.024)	(0.037)
Info	0.020	0.063
	(0.028)	(0.043)
Pads × Info	0.005	-0.040
	(0.033)	(0.051)
Observations	1,577	917
Factory FE	Yes	Yes
Worker Covariates	Yes	Yes
Surveyor FE	Yes	Yes
Control (mean)	0.753	0.614
Pads&Info vs. Control	0.198	0.303
Pads&Info vs. Ctr.: p-val.	0.000	0.000

Notes: Table shows results from regressing self-reported pad use at endline survey on indicator variables of the two main treatment arms *Pads* and *Info*, and the interaction term of the two arms, *Pads* × *Info*. Column 2 restricts sample to workers who reported to not use pads at baseline. Worker controls are worker age, marital status, parental status, migrant status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. Regressions thus control for baseline values of outcome variable (ANCOVA). *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Menstrual Health Management (MHM) Knowledge

	(1) Cause	(2) Dry	(3) Index
Pads	0.065*	-0.024	-0.005
	(0.034)	(0.019)	(0.017)
Info	0.063*	0.055***	0.049***
	(0.034)	(0.019)	(0.015)
Pads × Info	-0.088*	0.006	-0.010
	(0.050)	(0.027)	(0.022)
Observations	743	1,577	1,577
Factory FE	Yes	Yes	Yes
Worker Covariates	Yes	Yes	Yes
Surveyor FE	Yes	Yes	Yes
Control (mean)	0.096	0.552	0.545
Pads&Info vs. Control	0.039	0.036	0.033
Pads&Info vs. Ctr.: p-val.	0.236	0.057	0.024

Notes: Column 1 shows results from regressing dummies on whether worker agrees with all four statements that periods result from natural processes, are not an illness, not a curse, and not an unreasonable body function, on indicator variables of the two main treatment arms *Pads* and *Info*, and the interaction term of the two arms, *Pads* × *Info*. This question was only asked in Phase 2. Column 2 shows results from answer on whether worker agrees that reusable cloth should be dried outside in the sun after washing it. The index in Column 3 is the average over the two dummies for the workers from Phase 2, while it is only the answer to the question from Column 2 for workers from Phase 1. Worker controls are worker age, marital status, parental status, migrant status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. Regressions also control for baseline values of outcome variable (ANCOVA). *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Menstrual Health Practices

	(1) Cloth Wash	(2) Cloth Dry	(3) Index
Pads	0.009	0.029	0.019
	(0.013)	(0.022)	(0.013)
Info	0.017	0.095***	0.056***
	(0.014)	(0.025)	(0.015)
Pads × Info	-0.025	-0.065*	-0.045**
	(0.019)	(0.034)	(0.021)
Observations	1,577	1,577	1,577
Factory FE	Yes	Yes	Yes
Worker Covariates	Yes	Yes	Yes
Surveyor FE	Yes	Yes	Yes
Control (mean)	0.031	0.103	0.067
Pads&Info vs. Control	0.001	0.058	0.029
Pads&Info vs. Ctr.: p-val.	0.955	0.012	0.033

Notes: Table shows results from regressing a binary variable equal one if the menstrual health practice is followed, zero otherwise, on indicator variables of the two main treatment arms *Pads* and *Info*, and the interaction term of the two arms, *Pads* × *Info*. Column 1 refers to "washing menstrual cloth in private"; Column 2 refers to "drying menstrual cloth outside after washing". Worker controls are worker age, marital status, parental status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. The index in Column 3 is the average over the two indicator outcomes of Column 1 and Column 2. *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Urinary Tract Infections

VARIABLES	(1) UTI	(2) Days Lost	(3) Pain	(4) Odor	(5) Urinate	(6) Index
Pads	-0.055*	0.009	-0.010	-0.045	-0.035	-0.131**
	(0.029)	(0.027)	(0.041)	(0.033)	(0.036)	(0.063)
Info	-0.061**	0.010	-0.007	-0.034	-0.068*	-0.147**
	(0.028)	(0.028)	(0.042)	(0.034)	(0.035)	(0.062)
Pads × Info	0.070*	-0.006	-0.001	0.024	0.034	0.128
	(0.037)	(0.043)	(0.058)	(0.044)	(0.048)	(0.083)
Observations	809	826	751	750	751	1,577
Factory FE	Yes	Yes	Yes	Yes	Yes	Yes
Worker Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Surveyor FE	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Value	Yes	Yes	No	No	No	Yes
Control (mean)	0.131	0.053	0.219	0.144	0.176	0.002
Pads&Info vs. Control	-0.047	0.012	-0.018	-0.055	-0.069	-0.151
Pads&Info vs. Ctr.: p-val.	0.096	0.685	0.668	0.096	0.051	0.014

Notes: Table shows results from regressing self-reported prevalence of symptoms of Urinary Tract Infections (UTI) at endline survey on indicator variables of the two main treatment arms *Pads* and *Info*, and the interaction term of the two arms, *Pads* × *Info*. Note that Columns 1 and 2 show results for questions on UTI asked in Phase 1 only, while Columns 3 to 5 show results on questions asked at endline of Phase 2 only, which differed. In the baseline surveys of Phase 2, the same questions were still asked as in the base- and endline surveys of Phase 1. Thus, we cannot show ANCOVA specifications with the outcomes collected at endline of Phase 2 (Columns 3 to 5), as we had not asked the same questions at baseline of Phase 2. The Anderson index in column 6 combines an Anderson index for Phase 1 with an Anderson index for Phase 2. The baseline Anderson index, which is controlled for in Column 6, combines in the same way two indices created for Phase 1 and 2 (both being based on the same set of variables, which were collected at baseline of Phase 1 and 2). Worker controls are worker age, marital status, parental status, migrant status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Well-being at Work

VARIABLES	(1) Tired	(2) Target	(3) Energetic	(4) Absence Pain	(5) Irritated	(6) Shame	(7) Leak	(8) Odor	(9) Alone	(10) Index
Pads	0.015	-0.067	0.003	-0.031	0.020	-0.005	-0.046	0.044	0.049	-0.001
	(0.065)	(0.071)	(0.063)	(0.022)	(0.071)	(0.071)	(0.072)	(0.066)	(0.065)	(0.061)
Info	0.027	0.051	0.077	0.001	0.015	-0.004	0.064	0.077	0.014	0.048
	(0.065)	(0.070)	(0.062)	(0.021)	(0.073)	(0.071)	(0.073)	(0.066)	(0.068)	(0.062)
Pads × Info	-0.056	0.000	-0.140	0.029	-0.012	-0.022	-0.040	-0.091	0.020	0.010
	(0.090)	(0.098)	(0.088)	(0.030)	(0.100)	(0.099)	(0.101)	(0.092)	(0.091)	(0.086)
Observations	1,577	1,577	1,577	1,577	1,577	1,576	1,577	1,577	1,577	1,577
Factory FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Worker Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Surveyor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control (mean)	1.936	2.258	2.263	0.897	1.987	2.175	2.296	2.327	2.845	0.003
Pads&Info vs. Control	-0.014	-0.015	-0.059	-0.002	0.023	-0.031	-0.022	0.029	0.083	0.057
Pads&Info vs. Ctr.: p-val.	0.827	0.836	0.365	0.941	0.747	0.658	0.765	0.658	0.212	0.389

Notes: Table shows results from regressing self-reported well-being at work along nine dimensions during the endline survey on indicator variables of the two main treatment arms *Pads* and *Info*, and the interaction term of the two arms, *Pads* × *Info*. Column 10 shows result of regressing an Anderson index over the nine outcomes on the indicators. Worker controls are worker age, marital status, parental status, migrant status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. Regressions also control for baseline values of outcome variable (ANCOVA). *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Labor Market Outcomes, Panel Data

	(1)	(2)	(3)
			Turnover
VARIABLES	Absent	Earnings	Cox Hazard Md.
Pads × Post	-0.045	9.808	
	(0.062)	(54.113)	
Info × Post	-0.059	97.911*	
	(0.058)	(53.517)	
Pads × Info × Post	0.113	-86.635	
	(0.083)	(77.734)	
Pads			0.007
			(0.136)
Info			-0.129
			(0.139)
Pads × Info			0.097
			(0.193)
Observations	29,751	29,751	1,577
R-squared	0.196	0.677	
Factory FE	Yes	Yes	Yes
Worker Covariates	Yes	Yes	No
Basel. Values	Yes	Yes	No
Control (mean)	0.621	10718	
Pads&Info vs. Control	0.010	21.08	-0.025
Pads&Info vs. Ctr.: p-val.	0.856	0.707	0.854

Notes: Columns 1 and 2 show results from difference-in-differences specifications with following outcome variables: "Absent" refers to number of days worker was absent in month, "Earnings" refers to monthly, actual paid out wage in BDT. Column 3 shows results on workers leaving factory within 16 months after treatment, estimated from a Cox proportional hazard model. *Post* indicates time after start of free pad distribution/implementation of information sessions. *Pads* and *Info* refer to dummies indicating workers receiving these treatments, while *Pads* × *Info* is the interaction effect of the two treatments. Observations in Columns 1 and 2 are on the worker-month level, while on the worker level in Column 3. Sample in Column 1 and 2 consists of 1,577 workers and includes 6 months of data pre-start of treatments (starting with the April of the year in which treatments were started in the factory), and runs till February 2020 for Phase 1 and January 2021 for Phase 2. Columns 1 and 2 control for worker FE and factory-month FE. *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. For columns 1 and 2, the *Pads&Info vs. Control* estimate and p-value are those for the interaction of the *Pads&Info* dummy in this equivalent specification with the *Post* dummy. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Long-run Effects on Pad Use

VARIABLES	(1) Pads	(2) Other Materials	(3) Pads Short-run Same sample
Pads	0.070	-0.080	0.165***
	(0.055)	(0.058)	(0.047)
Info	0.051	-0.083	0.072
	(0.056)	(0.060)	(0.051)
Pads × Info	0.036	-0.024	0.010
	(0.075)	(0.079)	(0.063)
Observations	456	456	456
Factory FE	Yes	Yes	Yes
Worker Covariates	Yes	Yes	Yes
Surveyor FE	Yes	Yes	Yes
Control (mean)	0.745	0.292	0.745
Pads&Info vs. Control	0.157	-0.187	0.247
Pads&Info vs. Ctr.: p-val.	0.004	0.001	0.000

Notes: Table shows results from regressing pad use ("Pads"), or use of other materials during periods ("Other Materials"), as reported in a phone survey in June/July 2020 on indicator variables of the two main treatment arms *Pads* and *Info*, and the interaction term of the two arms, *Pads* × *Info*. Column 3 regresses adoption as reported in main endline survey (the data used in Table 2) on these treatments in the sub-sample surveyed in the long-run survey. Worker controls are worker age, marital status, parental status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. Regressions thus control for baseline values of outcome variable (ANCOVA). *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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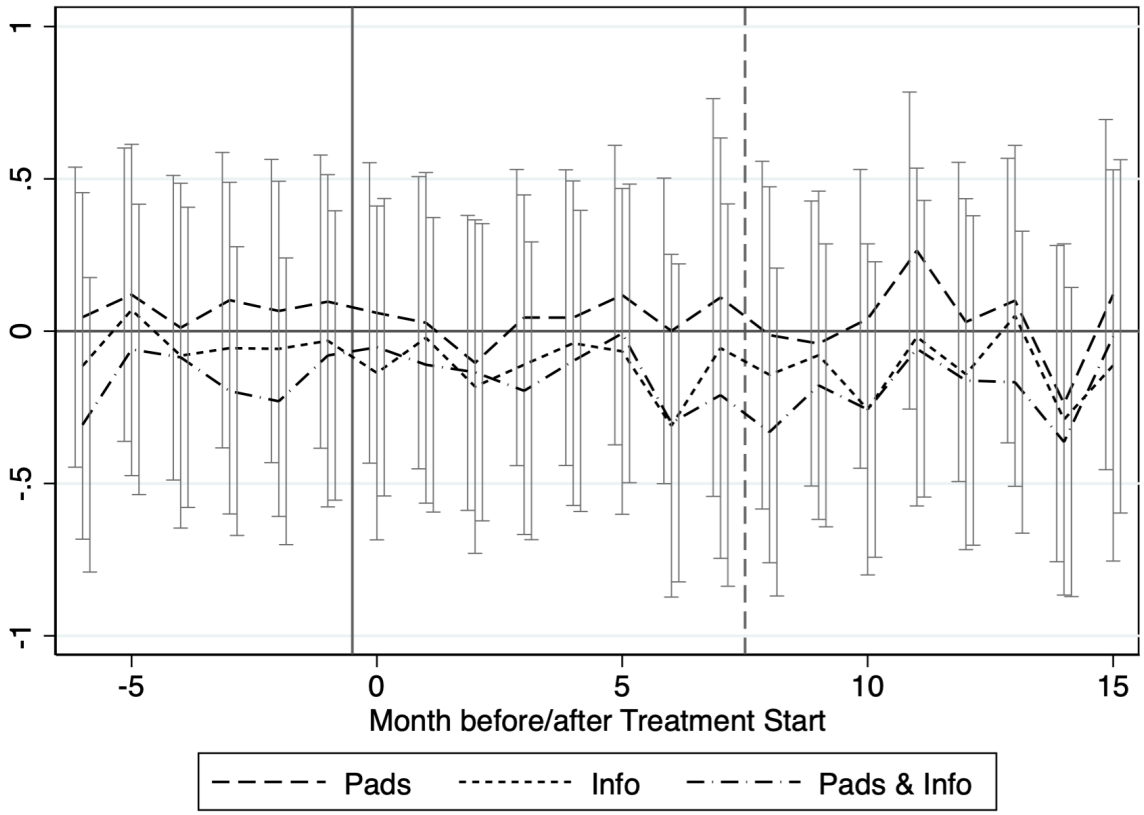
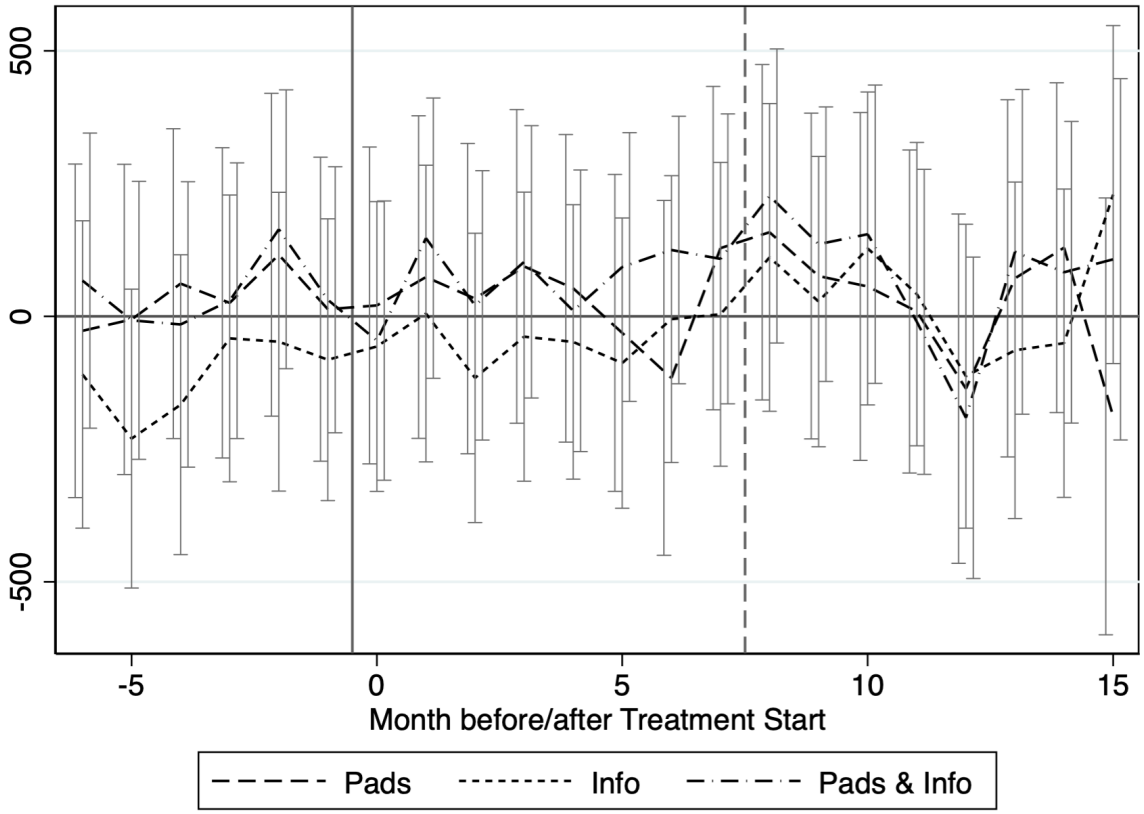
Appendix A: Time trends for worker absenteeism and earning by treatment group

Figure A.1: Absenteeism over Time



Notes: Graph shows the difference of average monthly number of absent days in the three main treatment groups to those in the control group, over the months before and after the start of the treatments. The solid vertical line indicates the start of free pads distribution and the time the information sessions were held, while the dashed vertical line the time the free pads distribution ended. The capped bars indicate 95% confidence intervals of the differences.

Figure A.2: Earnings over Time



Notes: Graph shows the difference of average monthly earnings in the three main treatment groups to those in the control group, over the months before and after the start of the treatments. The solid vertical line indicates the start of free pads distribution and the time the information sessions were held, while the dashed vertical line the time the free pads distribution ended. The capped bars indicate 95% confidence intervals of the differences.

Appendix B: Further Results and Robustness Checks

Table B.1: Multiple Hypotheses Testing Adjustments

Table	Outcome	Treatment	P-val	FDR
T2	Pad Use	Pads	0.000	0.001***
T2	Pad Use	Info	0.466	0.541
T2	Pad Use	Pads & Info	0.000	0.001***
T3	MHM Knowledge Index	Pads	0.748	0.909
T3	MHM Knowledge Index	Info	0.002	0.013**
T3	MHM Knowledge Index	Pads & Info	0.024	0.068*
T4	MHM Practice Index	Pads	0.156	0.263
T4	MHM Practice Index	Info	0.000	0.001***
T4	MHM Practice Index	Pads & Info	0.033	0.080*
T5	UTI Index	Pads	0.039	0.085*
T5	UTI Index	Info	0.019	0.064*
T5	UTI Index	Pads & Info	0.014	0.055*
T6	Wellbeing Index	Pads	0.984	1.000
T6	Wellbeing Index	Info	0.447	0.541
T6	Wellbeing Index	Pads & Info	0.389	0.541
T7	Absent	Pads	0.468	0.541
T7	Absent	Info	0.316	0.541
T7	Absent	Pads & Info	0.856	0.921
T7	Earnings	Pads	0.856	0.921
T7	Earnings	Info	0.068	0.118
T7	Earnings	Pads & Info	0.707	0.892
T7	Turnover	Pads	0.958	1.000
T7	Turnover	Info	0.351	0.541
T7	Turnover	Pads & Info	0.854	0.921
T8	Pad Use Long.R.	Pads	0.205	0.338
T8	Pad Use Long.R.	Info	0.365	0.541
T8	Pad Use Long.R.	Pads & Info	0.004	0.019**

Notes: Table shows the original p-values (P-val) of 27 coefficients, and the equivalent p-values after adjustment for multiple hypotheses testing using sharpened FDR q-values (Benjamini et al., 2006) within the set of these 27 p-values (FDR). The three p-values used from each of the nine included outcomes are the p-values of the difference in each treatment group against the control group, that is, the p-values of the *Pads* and *Info* groups, and of the *Pads&Info* group (shown at the bottom of all results tables) vs. *Control*: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2: Comparing Workers from Phase 1 and 2

	Mean Phase 1	Diff. Phase 2
Survey Data:		
Age	24.12	4.299***
Years Schooling	6.888	-1.583***
Married (0/1)	0.823	0.050***
Children (0/1)	0.636	0.114***
Children Nbr	0.877	0.468***
Migrant (0/1)	0.959	-0.469***
Live With: Total Person Nbr	1.573	1.004***
Live With: Husband (0/1)	0.790	-0.066***
Live With: Mother (0/1)	0.099	0.173***
Live With: Father (0/1)	0.075	0.087***
Live With: Sister (0/1)	0.083	0.061***
Live With: Brother (0/1)	0.049	0.104***
Live With: Mother in Law (0/1)	0.046	0.101***
Live With: Alone (0/1)	0.059	0.117***
Live With: Bathshare (0/1)	0.476	-0.070***
Born Rural Area (0/1)	0.970	-0.022**
Baseline Pad User (0/1)	0.468	-0.105***
Missed Work: Period Pain (0/1)	0.118	0.007
Missed Work: No MHM Materials (0/1)	0.039	-0.022***
Missed Work: Period Embarrasm. (0/1)	0.016	0.001
At Work Dur. Period: Tired (Lickert 1-4)	1.851	-0.113**
At Work Dur. Period: Target (Lickert 1-4)	2.117	-0.266***
At Work Dur. Period: Shame (Lickert 1-4)	2.391	-0.348***
At Work Dur. Period: Leak (Lickert 1-4)	2.386	-0.287***
At Work Dur. Period: Odor (Lickert 1-4)	2.673	-0.535***
At Work Dur. Period: Irrit (Lickert 1-4)	1.940	-0.157***
MHM Knowl.: Dry Pads Outside (0/1)	0.875	-0.740***
MHM Knowl.: Pads prev. Fung./Inf. (0/1)	0.984	-0.020**
Adminstr. Data:		
Absent Days /Month	0.502	-0.079**
Earnings (BDT/Month)	8697.	1277.***
Grade	4.610	1.082***
Sick Leave Days/Month	0.165	-0.084***
Attendance Bonus (BDT/Month)	513.5	-117.9***
Overtime Hours/Month	35.37	-10.49***
Years in Factory	2.568	-0.675***
F-test (p-val):		0.

Notes: Table shows difference in baseline observable variables between workers from Phase 1 (Factories 1-3) and Phase 2 (Factory 4): * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.3:
UTIs: Index, Phase 1 and Phase 2 Separately

VARIABLES	(1) Phase 1	(2) Phase 2
Pads	-0.137	-0.109
	(0.086)	(0.094)
Info	-0.150*	-0.133
	(0.085)	(0.092)
Pads × Info	0.171	0.066
	(0.111)	(0.123)
Observations	826	751
Factory FE	Yes	Yes
Worker Covariates	Yes	Yes
Surveyor FE	Yes	Yes
Baseline Value	Yes	Yes
Control (mean)	0.004	0.000
Pads&Info vs. Control	-0.116	-0.176
Pads&Info vs. Ctr.: p-val.	0.160	0.056

Notes: Table shows replications of Column 6 from Table 5 (with UTI Index as outcome) separately on the samples from Phase 1 (Factories 1-3) and Phase 2 (Factory 4). Worker controls are worker age, marital status, parental status, migrant status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. *Pads&Info vs. Control* and *Pads&Info vs. Ctr.: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.4: Minimum Detectable Effects (MDEs) and Minimum Rejected Effects (MREs)

Table, Outcome	Treatm.	Coeff	SE	MDE	MRE	Table, Outcome	Treatm.	Coeff	SE	MDE	MRE
T2 Pad Use	Pads	0.172	0.024	0.068	0.220	T6 Wellb. Target	Pads	-0.067	0.071	-0.198	-0.205
T2 Pad Use	Info	0.020	0.028	0.078	0.075	T6 Wellb. Target	Info	0.051	0.070	0.196	0.188
T2 Pad Use	Pads&Info	0.198	0.023	0.066	0.244	T6 Wellb. Target	Pads&Info	-0.015	0.072	-0.200	-0.155
T2 P.Use BL None	Pads	0.280	0.037	0.104	0.353	T6 Wellb. Energ.	Pads	0.003	0.063	0.176	0.126
T2 P.Use BL None	Info	0.063	0.043	0.121	0.148	T6 Wellb. Energ.	Info	0.077	0.062	0.174	0.199
T2 P.Use BL None	Pads&Info	0.303	0.303	0.848	0.897	T6 Wellb. Energ.	Pads&Info	-0.059	0.066	-0.184	-0.188
T3 Knowl. Cause	Pads	0.065	0.034	0.095	0.132	T6 Wellb. Absent	Pads	-0.031	0.022	-0.062	-0.074
T3 Knowl. Cause	Info	0.063	0.034	0.095	0.129	T6 Wellb. Absent	Info	0.001	0.021	0.060	0.043
T3 Knowl. Cause	Pads&Info	0.039	0.033	0.093	0.104	T6 Wellb. Absent	Pads&Info	-0.002	0.021	-0.058	-0.042
T3 Knowl. Dry	Pads	-0.024	0.019	-0.054	-0.062	T6 Wellb. Irrit.	Pads	0.020	0.071	0.200	0.160
T3 Knowl. Dry	Info	0.055	0.019	0.055	0.093	T6 Wellb. Irrit.	Info	0.015	0.073	0.203	0.158
T3 Knowl. Dry	Pads&Info	0.036	0.019	0.053	0.073	T6 Wellb. Irrit.	Pads&Info	0.023	0.071	0.198	0.161
T3 Knowl. Index	Pads	-0.005	0.017	-0.047	-0.038	T6 Wellb. Shame	Pads	-0.005	0.071	-0.198	-0.144
T3 Knowl. Index	Info	0.049	0.015	0.043	0.079	T6 Wellb. Shame	Info	-0.004	0.071	-0.200	-0.144
T3 Knowl. Index	Pads&Info	0.033	0.015	0.041	0.062	T6 Wellb. Shame	Pads&Info	-0.031	0.071	-0.199	-0.171
T4 Behav. Wash	Pads	0.009	0.013	0.036	0.034	T6 Wellb. Leak	Pads	-0.046	0.072	-0.201	-0.186
T4 Behav. Wash	Info	0.017	0.014	0.038	0.043	T6 Wellb. Leak	Info	0.064	0.073	0.203	0.206
T4 Behav. Wash	Pads&Info	0.001	0.012	0.033	0.024	T6 Wellb. Leak	Pads&Info	-0.022	0.075	-0.209	-0.169
T4 Behav. Dry	Pads	0.029	0.022	0.062	0.072	T6 Wellb. Odor	Pads	0.044	0.066	0.184	0.172
T4 Behav. Dry	Info	0.095	0.025	0.069	0.143	T6 Wellb. Odor	Info	0.077	0.066	0.185	0.206
T4 Behav. Dry	Pads&Info	0.058	0.023	0.064	0.103	T6 Wellb. Odor	Pads&Info	0.029	0.066	0.186	0.159
T4 Behav. Index	Pads	0.019	0.013	0.037	0.045	T6 Wellb. Alone	Pads	0.049	0.065	0.183	0.177
T4 Behav. Index	Info	0.056	0.015	0.042	0.085	T6 Wellb. Alone	Info	0.014	0.068	0.190	0.147
T4 Behav. Index	Pads&Info	0.029	0.014	0.038	0.056	T6 Wellb. Alone	Pads&Info	0.083	0.067	0.187	0.214
T5 UTI Ever	Pads	-0.055	0.029	-0.081	-0.112	T6 Wellb. Index	Pads	-0.001	0.061	-0.170	-0.121
T5 UTI Ever	Info	-0.061	0.028	-0.079	-0.117	T6 Wellb. Index	Info	0.048	0.062	0.175	0.170
T5 UTI Ever	Pads&Info	-0.047	0.028	-0.079	-0.102	T6 Wellb. Index	Pads&Info	0.057	0.066	0.184	0.185
T5 UTI DaysLost	Pads	0.009	0.027	0.077	0.063	T7 Absent	Pads	-0.045	0.062	-0.172	-0.165
T5 UTI DaysLost	Info	0.010	0.028	0.079	0.065	T7 Absent	Info	-0.059	0.058	-0.164	-0.173
T5 UTI DaysLost	Pads&Info	0.012	0.031	0.086	0.072	T7 Absent	Pads&Info	0.010	0.055	0.154	0.118
T5 UTI Pain	Pads	-0.010	0.041	-0.115	-0.090	T7 Earnings	Pads	9.808	54.11	151.5	115.8
T5 UTI Pain	Info	-0.007	0.042	-0.117	-0.089	T7 Earnings	Info	97.91	53.51	149.8	202.8
T5 UTI Pain	Pads&Info	-0.018	0.041	-0.115	-0.098	T7 Earnings	Pads&Info	21.08	56.03	156.9	130.9
T5 UTI Odor	Pads	-0.045	0.033	-0.092	-0.109	T7 Turnover	Pads	0.007	0.136	0.381	0.274
T5 UTI Odor	Info	-0.034	0.034	-0.096	-0.101	T7 Turnover	Info	-0.129	0.139	-0.389	-0.402
T5 UTI Odor	Pads&Info	-0.055	0.033	-0.093	-0.120	T7 Turnover	Pads&Info	-0.025	0.135	-0.378	-0.289
T5 UTI Urinate	Pads	0.034	0.048	0.134	0.128	T8 LongRUse	Pads	0.070	0.055	0.154	0.178
T5 UTI Urinate	Info	-0.068	0.035	-0.099	-0.138	T8 LongRUse	Info	0.051	0.056	0.158	0.162
T5 UTI Urinate	Pads&Info	-0.069	0.035	-0.099	-0.139	T8 LongRUse	Pads&Info	0.157	0.054	0.151	0.263
T5 UTI Index	Pads	-0.131	0.063	-0.178	-0.256	T8 LRUse Oth.M.	Pads	-0.080	0.058	-0.162	-0.194
T5 UTI Index	Info	-0.147	0.062	-0.175	-0.270	T8 LRUse Oth.M.	Info	-0.083	0.060	-0.168	-0.201
T5 UTI Index	Pads&Info	-0.151	0.061	-0.172	-0.271	T8 LRUse Oth.M.	Pads&Info	-0.187	0.054	-0.152	-0.294
T6 Wellb. Tired	Pads	0.015	0.065	0.181	0.142	T8 LRUse Sh.Run	Pads	0.165	0.047	0.131	0.256
T6 Wellb. Tired	Info	0.027	0.065	0.182	0.155	T8 LRUse Sh.Run	Info	0.072	0.051	0.142	0.171
T6 Wellb. Tired	Pads&Info	-0.014	0.065	-0.182	-0.142	T8 LRUse Sh.Run	Pads&Info	0.247	0.045	0.125	0.334

Notes: Table shows for all outcomes from Tables 2 to 8 ex-post MDEs (2.8$\times$ SE), and MREs, the upper (lower) boundary of the coefficient's 95% confidence interval if the coefficient is positive (negative). The three coefficients used from each of the nine included outcomes are those on each treatment group against the control group, that is, the coefficients of the *Pads* and *Info* groups, and of the *Pads&Info* group (shown at the bottom of all results tables) vs. *Control*: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.5: Characteristics and Balance of Workers in Long-Run Sample

	(1) Mean Overall	(2) Mean Control	(3) Diff. Pads	(4) Diff. Info	(5) Diff. Pads&Info	(6) F-Test
Survey Data:						
Share Re-surveyed	0.255	0.239	0.035	0.030	-0.002	0.378
Age	26.91	26.20	-0.172	1.476**	0.794	0.090*
Years Schooling	5.892	5.858	0.137	0.163	0.136	0.978
Married (0/1)	0.850	0.830	0.030	0.056	-0.012	0.464
Children (0/1)	0.717	0.726	-0.032	-0.026	0.007	0.884
Children Nbr	1.133	1.066	-0.031	0.112	0.112	0.531
Migrant (0/1)	0.724	0.707	0.016	0.045	0.075	0.501
Live With: Total Person Nbr	2.135	2.075	-0.056	-0.051	0.221	0.206
Live With: Husband (0/1)	0.736	0.679	0.076	0.088	0.075	0.422
Live With: Mother (0/1)	0.201	0.235	-0.064	-0.072	-0.016	0.429
Live With: Father (0/1)	0.116	0.113	-0.030	-0.044	0.080*	0.016**
Live With: Sister (0/1)	0.116	0.122	-0.049	-0.014	0.035	0.242
Live With: Brother (0/1)	0.105	0.094	0.011	-0.004	0.022	0.907
Live With: Mother in Law (0/1)	0.096	0.084	0.021	0.020	-0.011	0.794
Live With: Alone (0/1)	0.133	0.160	-0.014	-0.085*	-0.018	0.221
Live With: Bathshare (0/1)	0.469	0.424	0.068	0.034	0.092	0.548
Born Rural Area (0/1)	0.951	0.942	0.033	-0.019	0.022	0.245
Baseline Pad User (0/1)	0.407	0.433	-0.050	0.012	-0.060	0.603
Missed Work: Period Pain (0/1)	0.100	0.103	0.021	-0.014	-0.028	0.623
Missed Work: No MHM Materials (0/1)	0.021	0.018	-0.008	0.024	-0.005	0.288
Missed Work: Period Embarrasm. (0/1)	0.021	0.018	0.004	0.024	-0.017	0.197
At Work Dur. Period: Tired (Lickert 1-4)	1.734	1.726	-0.081	0.043	0.065	0.631
At Work Dur. Period: Target (Lickert 1-4)	1.969	2.009	-0.103	0.060	-0.118	0.439
At Work Dur. Period: Shame (Lickert 1-4)	2.214	2.113	0.062	0.185	0.182	0.446
At Work Dur. Period: Leak (Lickert 1-4)	2.186	2.150	0.063	-0.020	0.167	0.579
At Work Dur. Period: Odor (Lickert 1-4)	2.399	2.386	-0.024	0.147	-0.028	0.554
At Work Dur. Period: Irrit. (Lickert 1-4)	1.844	1.971	-0.184	-0.122	-0.176	0.550
MHM Knowl.: Cause of Periods (0/1)	0.089	0.109	-0.077	-0.041	0.035	0.117
MHM Knowl.: Dry Pads Outside (0/1)	0.469	0.528	-0.067	-0.020	-0.055	0.407
MHM Knowl.: No Reuse of Pads (0/1)	0.936	0.909	0.012	0.027	0.062	0.504
MHM Knowl.: Pads prev. Fung./Inf. (0/1)	0.964	0.952	-0.001	0.031	0.020	0.456
MHM Practice: Dry Cloth Outside (0/1)	0.072	0.055	0.039	0.042	-0.012	0.529
Adminstr. Data:						
Absent Days/Month	0.476	0.460	0.167*	-0.024	-0.084	0.044**
Earnings (BDT/Month)	9,651	9,685	-172.0	25.01	-98.44	0.529
Grade	5.120	4.999	0.243*	-0.018	0.148	0.206
Sick Leave Days/Month	0.104	0.095	0.070	-0.077	0.054	0.026**
Attendance Bonus (BDT/Month)	441.4	461.5	-44.50*	-3.091	-0.634	0.141
Overtime Hours/Month	30.59	30.97	-0.070	0.549	-0.232	0.684
Years in Factory	3.003	2.994	-0.244	-0.000	0.078	0.763
F-test (p-val):			0.81	0.37	0.32	

Notes: Table replicates Table 1 on the sample of 456 workers surveyed in the long-run survey (June/July 2020). "Share Re-surveyed" shows the percentage of workers from the respective treatment group that we re-survey in the long-run survey. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.6: Robustness Check - Social Ties to other Treated Workers, Pad Use, Phase 2

	(1)	(2)
	Pad Use	
Pads	0.203***	0.203***
	(0.076)	(0.077)
Pads × Conn. Any Treat.	0.068	
	(0.090)	
Pads × Conn. Pads only		0.164
		(0.129)
Pads × Conn. Info only		0.150
		(0.126)
Pads × Conn. Pads & Info		0.014
		(0.099)
Info	-0.129	-0.130
	(0.083)	(0.084)
Info × Conn. Any Treat.	0.152	
	(0.100)	
Info × Conn. Pads only		0.315**
		(0.140)
Info × Conn. Info only		0.261*
		(0.157)
Info × Conn. Pads & Info		0.071
		(0.110)
Pads × Info	0.187*	0.189*
	(0.103)	(0.104)
Pads × Info × Conn. Any Treat.	-0.194	
	(0.124)	
Pads × Info × Conn. Pads only		-0.269
		(0.171)
Pads × Info × Conn. Info only		-0.292
		(0.185)
Pads × Info × Conn. Pads & Info		-0.132
		(0.136)
Conn. Any Treatment	-0.043	
	(0.071)	
Conn. Pads only		-0.110
		(0.107)
Conn. Info only		-0.125
		(0.106)
Conn. Pads & Info		-0.016
		(0.078)
Observations	752	752
R-squared	0.205	0.214
Factory FE	Yes	Yes
Worker Covariates	Yes	Yes
Control (mean)	0.658	0.658

Notes: Column 1 replicates Column 1 from Table 2, but interacting treatments with a dummy variable indicating that the worker shares social ties with a treated worker in any treatment arm. Column 2 replicates the same column, but with treatment group indicators interacted with three (non-overlapping) indicators: a) having a social tie to someone who received free pads treatment but no information, b) having social ties to someone who received information treatment but no free pads, and c) having social ties to someone who received free pads and information. Social connection to someone defined as that someone mentioning the person in network survey as social tie. Sample only contains workers from Phase 2, as social network data was only collected in Phase 2. Worker controls are worker age, marital status, parental status, migrant status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.7: Characteristics and Balance of Attrited Workers

	(1) Mean Overall	(2) Mean Control	(3) Diff. Pads	(4) Diff. Info	(5) Diff. Pads&Info	(6) F-Test
Survey Data:						
Share Attriter	0.163	0.176	-0.010	-0.016	-0.023	0.791
Age	24.76	24.34	0.188	0.358	0.737	0.871
Years Schooling	6.340	6.903	-0.892**	-0.375	-0.728*	0.174
Married (0/1)	0.788	0.831	-0.055	-0.045	-0.086	0.618
Children (0/1)	0.597	0.614	-0.032	-0.061	0.004	0.829
Children Nbr	0.954	0.975	-0.095	-0.121	0.076	0.614
Migrant (0/1)	0.755	0.795	-0.063	0.005	-0.035	0.582
Live With: Total Person Nbr	1.964	2.012	-0.094	-0.276	0.065	0.283
Live With: Husband (0/1)	0.694	0.698	0.014	-0.006	-0.021	0.971
Live With: Mother (0/1)	0.198	0.204	0.023	-0.039	-0.036	0.707
Live With: Father (0/1)	0.149	0.144	0.023	-0.013	-0.002	0.934
Live With: Sister (0/1)	0.133	0.132	-0.027	0.019	0.009	0.843
Live With: Brother (0/1)	0.120	0.108	0.015	-0.015	0.030	0.840
Live With: Mother in Law (0/1)	0.077	0.072	0.002	-0.018	0.023	0.821
Live With: Alone (0/1)	0.123	0.120	0.019	-0.026	0.004	0.860
Live With: Bathshare (0/1)	0.474	0.445	0.031	0.009	0.083	0.741
Born Rural Area (0/1)	0.953	0.915	0.070**	0.072**	0.012	0.058*
Baseline Pad User (0/1)	0.444	0.445	0.087	-0.067	-0.017	0.275
Missed Work: Period Pain (0/1)	0.155	0.120	0.072	0.077	-0.030	0.173
Missed Work: No MHM Materials (0/1)	0.042	0.024	0.026	0.021	0.014	0.853
Missed Work: Period Embarrasm. (0/1)	0.012	0	0.039**	-0.002	0.014	0.081*
At Work Dur. Period: Tired (Lickert 1-4)	1.766	1.554	0.322**	0.341**	0.226	0.106
At Work Dur. Period: Target (Lickert 1-4)	2.029	1.975	-0.048	0.081	0.241	0.288
At Work Dur. Period: Shame (Lickert 1-4)	2.149	2.108	-0.076	-0.028	0.311*	0.083*
At Work Dur. Period: Leak (Lickert 1-4)	2.162	2.036	0.167	0.133	0.283	0.460
At Work Dur. Period: Odor (Lickert 1-4)	2.379	2.325	0.122	-0.081	0.270	0.199
At Work Dur. Period: Irrit. (Lickert 1-4)	1.844	1.843	0.144	-0.072	-0.088	0.531
MHM Knowl.: Cause of Periods (0/1)	0.082	0.058	0.003	0.020	0.079	0.666
MHM Knowl.: Dry Pads Outside (0/1)	0.527	0.518	-0.002	0.072	0.021	0.517
MHM Knowl.: No Reuse of Pads (0/1)	0.925	0.911	0.025	-0.014	0.053	0.741
MHM Knowl.: Pads prev. Fung./Inf. (0/1)	0.960	0.962	0.009	-0.026	0.007	0.644
MHM Practice: Dry Cloth Outside (0/1)	0.067	0.088	-0.023	-0.062	0.015	0.598
Adminstr. Data:						
Absent Days/Month	0.667	0.683	0.037	-0.115	-0.003	0.710
Earnings (BDT/Month)	8,791	8,602	121.4	230.8	243.1	0.632
Grade	5.144	5.191	-0.020	-0.175	-0.039	0.741
Sick Leave Days/Month	0.111	0.102	0.041	0.040	-0.069	0.408
Attendance Bonus (BDT/Month)	382.8	371.4	30.31	18.36	45.97	0.665
Overtime Hours/Month	27.79	27.64	0.220	1.221	0.937	0.571
Years in Factory	2.084	1.723	0.591*	0.580*	0.054	0.165
F-test (p-val):			0.65	0.50	0.98	

Notes: Table replicates Table 1 on sample of attrited workers (308 in total). Note that we count all workers as attrited who do not enter the main analysis sample of 1,577 workers, for whom all core outcome variables are available. Thus, some of the workers considered attrited were surveyed in the endline survey, but some outcome variable values are not available (242 of the 308 attrited workers were not surveyed at all in the endline surveys). Variable "Share Attrited" shows share of workers that attrited in overall sample, and in each treatment and control group. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.8: Robustness Check - Social Desirability Bias

VARIABLES	(1) Pad Use	(2) Knowledge Index	(3) Practice Index	(4) UTI Index	(5) Well-being Index
Pads	0.287***	0.008	0.038	-0.126	0.118
	(0.050)	(0.032)	(0.025)	(0.118)	(0.108)
Pads × High Desir. Score	-0.092	0.046	-0.016	0.041	-0.021
	(0.083)	(0.048)	(0.041)	(0.192)	(0.174)
Info	-0.007	0.054*	0.081***	-0.121	0.201*
	(0.058)	(0.031)	(0.027)	(0.117)	(0.103)
Info × High Desir. Score	-0.037	0.058	0.022	-0.030	-0.128
	(0.097)	(0.057)	(0.050)	(0.185)	(0.176)
Pads × Info	0.051	-0.053	-0.088**	0.043	-0.270*
	(0.068)	(0.044)	(0.038)	(0.156)	(0.146)
Pads × Info × High Desir. Score	-0.002	-0.021	0.008	0.059	0.219
	(0.116)	(0.077)	(0.067)	(0.252)	(0.232)
High Desirability Score	0.063	-0.010	0.041	0.031	0.105
	(0.065)	(0.031)	(0.026)	(0.145)	(0.137)
Observations	751	751	751	751	751
Factory FE	Yes	Yes	Yes	Yes	Yes
Worker Covariates	Yes	Yes	Yes	Yes	Yes
Surveyor FE	Yes	Yes	Yes	Yes	Yes
Pads&Info vs. Ctr.	0.330	0.009	0.031	-0.204	0.050
Pads&Info vs. Ctr.: p-val.	0.000	0.763	0.229	0.068	0.648
Pads&Info vs. Ctr. × Des.High	-0.131	0.083	0.014	0.069	0.070
Pads&Info vs. Ctr. × Des.H.: p-val.	0.091	0.085	0.733	0.709	0.685

Notes: Column 1 replicates Column 1 from Table 2, Column 2 replicates Column 3 from Table 3, Column 3 replicates Column 3 from Table 4, Column 4 replicates Column 6 from Table 5, and Column 5 replicates Column 10 from Table 6, adding interaction terms of the three treatment arm indicators with a dummy indicating whether the worker has above median levels on a desirability score following Crowne and Marlowe (1960) and Dhar et al. (2022). For this score, we asked a series of 13 questions at baseline designed to elicit social desirability, with two answer choices: agree or disagree, plus a third option we added for respondents who don't know the answer and/or would like to skip the question. The questions are the following: 1. It is sometimes hard for me to go on with my work if I am not encouraged; 2. I sometimes feel resentful when I don't get my way; 3. On a few occasions, I have given up doing something because I thought too little of my ability; 4. There have been times when I felt like rebelling against people in authority even though I knew they were right; 5. No matter who I'm talking to, I'm always a good listener; 6. There have been occasions when I took advantage of someone; 7. I'm always willing to admit it when I make a mistake; 8. I sometimes try to get even rather than forgive and forget; 9. I am always courteous, even to people who are disagreeable; 10. I have never been irked when people expressed ideas very different from my own; 11. There have times when I was quite jealous of the good fortune of others; 12. I am sometimes irritated by people who ask favors of me; 13. I have never deliberately said something that hurt someone's feelings. To construct our social desirability score we, first, calculate for each respondent a score which is the average of all their responses and, second, assign a high desirability score equal to one to all respondents with an individual score above the median score, and zero otherwise. Sample only contains workers from Phase 2, as data needed to construct score was only collected in Phase 2. Worker controls are worker age, marital status, parental status, years of schooling, baseline pad use, and whether worker shares bathroom with people from other households. Regressions also control for baseline values of outcome variable (ANCOVA). *Pads&Info vs. Ctr*, *Pads&Info vs. Ctr.: p-val.*, *Pads&Info vs. Ctr* × *Des.High* and *Pads&Info vs. Ctr.*× *D.High: p-val.* show coefficient and p-value for the combined *Pads & Info* treatment group (without and with the interaction with above-median social desirability score indicator) from an equivalent regression in which treatment dummies *Pads* and *Info* take value one only for workers who only received free pads, or only information, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Appendix C: Pre-Analysis Plan

We registered a Pre-Analysis Plan (henceforce PAP) for this study in November 2018 at socialscienceregistry.org (under RCT ID AEARCTR-0003298), just around the time the baseline surveys at the three factories (Phase 1) had ended and the information sessions had been implemented at these factories. It was half a year before the collection of the first follow-up survey data, and before we had collected any post-treatment start HR data. In this Appendix, we discuss how we implement the PAP in our analysis, and where we do minor deviations. We also show results of further pre-specified analysis in this Appendix that we do not show in the main text, due to space constraints. We structure this Appendix by following the structure of the PAP with its different sections. Note that some pre-specified analysis is not shown in this paper as it will be discussed in a planned companion paper on the interplay of social norms and adoption of pads. We indicate in this Appendix which analysis will be shown in this companion paper.

PAP Sections 1-3: Treatment Arms and Data Collection

Section 1 of the PAP describes the basic project design, and Sections 2-3 the data and outcome variables we planned to collect. We maintained the design and collected all data except for two outcomes. The first outcome is purchases of sanitary pads by workers in stores run by the factories (Outcome Variable 4 in PAP), because ultimately only one of our four partner factory had an operating store for workers, and this factory contributed only 200 workers to the sample. Second, we did not collect data on number of visits by workers to the factory's medical officer (Outcome Variable 5 in PAP). All partner factories have a medical room staffed by a medical officer, which workers can visit. The medical officers keep (hand-written) records of all visits by workers, including the worker's identity and the basic health

problem. We ended up not collecting these records for a number of reasons. First, copying, digitizing and formatting the hand-written records in Bengali would have been very costly. Second, we did not know what kind of effects to expect from our treatments. Would improved health from our intervention lead to fewer visits at the doctor, or would increased awareness of the importance of hygienic MHM lead to more visits? And do workers visit the factory medical officer with MHM related health problems, or health services outside the factories? Finally, this data is subject to a privileged relationship between patients and the health workers, which makes collection of this data problematic on ethical grounds.

Furthermore, we do not report results on perceived restrictions on activities during the days a women has her period (Outcome Variables 6 in PAP) and on willingness to pay for pads (Outcome Variables 7 in PAP), as we plan to study them in the above-mentioned companion paper.

An additional outcome that we did collect and analyze even though it was not pre-specified in the PAP is monthly earnings by the workers, based on HR administrative records. Evidently, earnings is a key variable of interest if we are interested in worker productivity and welfare. Also, the earnings data was included already in the absenteeism and turnover records that we collected from the HR departments. Furthermore, given that earnings in our sector are largely determined by worker absenteeism, overtime hours, and wage-grade,[30] the variable is a useful aggregator of a number of other outcomes that could each be affected by our intervention.

Furthermore, as discussed in the text, in the baseline surveys of Phase 2, we also collected information on variables that allows us to construct the desirability bias index following Crowne and Marlowe (1960) and Dhar et al. (2022) (see Table B.8), and data on

[30]Workers are sorted into seven grades based on their skills, see Menzel and Woodruff (2021) for a more detailed discussion of the grade system.

the social network between all participating workers from Phase 2 (see Table B.6). We did not pre-specify the collection of these variables.

We pre-specified to collect data on which brands of sanitary pads those workers prefer who report using pads (Outcome 1.b.iii). We do not analyze this outcome in the main text but discuss it quickly here. Interestingly, at baseline, 75% of workers who report using pads report using a brand which is generally considered as more high priced, while 20% use two brands considered middle priced. By the endline surveys, 50% reported to prefer the middle priced products, while the popularity of the high-priced product shrank to 30%. This move is also visible among only those workers who already used pads at baseline. The switch to the lower-priced product was stronger among workers randomized into receiving information and among control workers, while less among those who had access to free pads.

PAP Section 4: Analysis

Section 4 of the PAP pre-specifies empirical strategies to analyze our data. Following the plan, we do basic comparisons of outcomes across the four treatment arms of the main experiment (ITT analysis) in form of regressions with factory fixed effects. For the analysis of the "high frequency" (monthly) outcomes from the HR data, we control for factory-month fixed effects, as pre-specified. For the core HR data outcomes (Earnings and Absenteeism), we also inspect how the treatment effects evolve month-by-month, by showing the monthly trends of treatment effects in Figures A.2 and A.1. We leave the analysis of the "additional absorption experiment", and of pad collection rates from male vs. female distribution workers to the above mentioned companion paper.

We specified that for "... all survey data outcomes that were collected at the baseline and the follow-up survey, we additionally conduct difference-in-differences analysis...[and]... regression analysis controlling for baseline values of outcome variables (ANCOVA)". Fol-

lowing feedback over the course of the project, we are now using ANCOVA specifications as our main specification throughout the paper when analysing survey data outcomes. We do not also show difference-in-differences (DiD) specifications, as for specifications with one pre- and one post-treatment measure of the outcome, DiD can be considered a special case of ANCOVA. Meanwhile, as already stated in the main text, for the analysis of the HR data, we use DiD specifications, to increase the precision of the estimates.

As pre-specified, we control all survey based results for a battery of worker controls, including worker age, years of schooling, marital status, parental status, migrant status, baseline pad use, sharing of sanitary facilities as proxy for living arrangements, as well as interviewer fixed effects. For the HR data based analysis, our base specifications control for worker fixed effects (Table 7), which account for these worker level observables.

Regarding Section 4.1, "Dynamic Effects", as already mentioned at the beginning of this section, we a) show how the treatment effects on earnings and absenteeism evolve month-by-month in Figures A.2 and A.1.

Regarding Section 4.2, "Heterogeneous effects", of the PAP, we show this analysis in Table C.1 below. We do not find a large number of consistent heterogeneous effects, except that the effect of both treatments on pad use seemed to have been larger among workers who at baseline deemed drying cloth used during periods outside socially inappropriate. Furthermore, there appear to be positive effects of the information treatment on earnings among younger workers (though not among those receiving both treatments). However, given the large number of tests shown in Table C.1, we caution that these effects may be spurious. We did not implement machine learning algorithms for sub-sample analysis or selecting controls, as our selected controls and sub-sample analysis were either pre-specified or are, we believe, well-motivated by theory.

Regarding Section 4.3, "Attrition", of the PAP, all three proposed tests were implemented, with results reported in subsection 5.2 of the Robustness Checks section.

Finally, we did not run instrumental variable regressions with treatment assignment as instrument for either pad adoption or attendance of information sessions. As already stated in the main text, attendance at the information sessions was near perfect, while pad collection rates were above 70 percent. Thus treatment-on-the-treated effects would not differ a lot from the reported ITT effects.

PAP Section 5: Data Handling

Section 5 of the PAP pre-specifies three data handling procedures. First, as pre-specified, we exclude survey based outcomes from analysis in which more than 95 percent of respondents provide the same answer. This criterion held for three outcomes that we asked in the survey module in which we test workers for their knowledge around MHM (Table 3).

Second, we winsorize earnings, our only outcome variable that is not well-bounded or from a Lickert scale, at the top and bottom one percent. We winsorize at the bottom 1 percent, as workers sometimes have very low recorded wages for a given month if they worked only a few days per month, for example due to taking leave or due to a longer illness, and we do not want results to be driven by such unusual observations. However, the results on earnings are the same when not winsorizing this variable.

Finally, we did not encounter variables with more than 20 percent non-response, which we would have otherwise excluded from the analysis.

Appendix C.1: Survey Results Heterogeneity Analysis

Table C.1: Further Heterogeneity Analysis

	(1) Age	(2) Years Schooling	(3) Lives w. Husband	(4) Children	(5) Migrant	(6) Tired dur. Period	(7) Dry Pads Inappr.
Panel 1: Pad Use							
Pads	0.160***	0.170***	0.243***	0.129***	0.199***	0.193***	0.144***
	(0.033)	(0.031)	(0.049)	(0.037)	(0.050)	(0.035)	(0.036)
Pads × Worker Char.	0.025	0.006	-0.096*	0.063	-0.034	-0.040	0.045
	(0.048)	(0.050)	(0.057)	(0.048)	(0.057)	(0.048)	(0.048)
Info	0.025	0.024	0.089*	-0.013	-0.002	0.041	0.036
	(0.038)	(0.036)	(0.054)	(0.044)	(0.058)	(0.040)	(0.041)
Info × Worker Char.	-0.009	-0.011	-0.095	0.048	0.030	-0.040	-0.023
	(0.056)	(0.057)	(0.063)	(0.056)	(0.066)	(0.056)	(0.056)
Pads × Info	-0.014	0.015	-0.103	-0.028	0.041	-0.023	-0.055
	(0.046)	(0.043)	(0.065)	(0.053)	(0.071)	(0.048)	(0.050)
Pads × Info × Worker Char.	0.039	-0.025	0.144*	0.049	-0.045	0.057	0.093
	(0.066)	(0.069)	(0.076)	(0.068)	(0.080)	(0.067)	(0.067)
Worker Characteristic	0.001	0.009	0.114**	-0.072*	-0.028	0.053	-0.031
	(0.045)	(0.047)	(0.052)	(0.041)	(0.049)	(0.040)	(0.041)
Observations	1577	1577	1577	1577	1566	1577	1576
Panel 2: MHM Knowledge							
Pads	-0.017	-0.021	0.013	0.005	0.005	-0.009	-0.045*
	(0.024)	(0.019)	(0.039)	(0.030)	(0.032)	(0.023)	(0.027)
Pads × Worker Char.	0.023	0.046	-0.025	-0.016	-0.015	0.006	0.062*
	(0.033)	(0.037)	(0.043)	(0.036)	(0.038)	(0.033)	(0.034)
Info	0.042**	0.028	0.065*	0.048*	0.063*	0.036*	0.023
	(0.021)	(0.018)	(0.036)	(0.028)	(0.033)	(0.020)	(0.020)
Info × Worker Char.	0.013	0.059*	-0.023	0.001	-0.018	0.026	0.042
	(0.031)	(0.033)	(0.039)	(0.033)	(0.037)	(0.031)	(0.029)
Pads × Info	-0.008	0.011	-0.037	-0.011	-0.054	0.016	0.043
	(0.031)	(0.026)	(0.049)	(0.039)	(0.045)	(0.030)	(0.033)
Pads × Info × Worker Char.	-0.004	-0.060	0.036	0.002	0.059	-0.053	-0.082*
	(0.044)	(0.047)	(0.055)	(0.048)	(0.052)	(0.044)	(0.044)
Worker Characteristic	-0.046*	-0.050*	0.032	0.001	0.000	-0.009	-0.045**
	(0.026)	(0.029)	(0.031)	(0.025)	(0.027)	(0.022)	(0.023)
Observations	1577	1577	1577	1577	1566	1577	1576

Notes: The eight panels of Table C.1 replicate Column 1 from Table 2 (Panel 1), Column 3 from Table 3 (Panel 2), Column 3 from Table 4 (Panel 3), Column 6 from Table 5 (Panel 4), Column 10 from Table 6 (Panel 5) and columns 1-3 from Table 7 (Panels 6-8), each time interacting the three treatment arm dummies with the seven variables indicated in the column heads. In Panels 1-5 the Variable "Worker Char." always refers to the variable indicated in the column heads. In Panels 6-7, the variables is absorbed by the worker fixed effects. Robust standard errors in brackets, or standard errors clustered at the worker level for Panels 6-7. For the relevant variables of Columns 5 (Migrant) and 7 (Dry Pads Inappr.) less than 1,577 workers replied to the survey (these are the variables for which, when used as controls in the main regressions, we add an additional variable indicating missing values, and set the missing values to zero). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C.1: Further Heterogeneity Analysis - Continued

	(1) Age	(2) Years Schooling	(3) Lives w. Husband	(4) Children	(5) Migrant	(6) Tired dur. Period	(7) Dry Pads Inappr.
Panel 3: MHM Practice							
Pads	0.009	0.026*	-0.005	-0.005	-0.005	0.007	-0.011
	(0.018)	(0.015)	(0.027)	(0.023)	(0.026)	(0.019)	(0.021)
Pads × Worker Char.	0.021	-0.021	0.031	0.034	0.036	0.023	0.046*
	(0.026)	(0.029)	(0.030)	(0.028)	(0.030)	(0.026)	(0.026)
Info	0.067***	0.051***	0.089***	0.039	0.033	0.040*	0.003
	(0.022)	(0.017)	(0.031)	(0.027)	(0.029)	(0.022)	(0.024)
Info × Worker Char.	-0.023	0.010	-0.044	0.024	0.034	0.032	0.080***
	(0.030)	(0.033)	(0.036)	(0.033)	(0.033)	(0.030)	(0.031)
Pads × Info	-0.043	-0.044*	-0.050	0.013	-0.040	-0.022	0.025
	(0.030)	(0.024)	(0.042)	(0.037)	(0.038)	(0.029)	(0.032)
Pads × Info × Worker Char.	-0.005	-0.001	0.008	-0.084*	-0.014	-0.047	-0.108**
	(0.041)	(0.045)	(0.048)	(0.044)	(0.045)	(0.041)	(0.042)
Worker Characteristic	0.005	0.009	-0.008	-0.007	-0.003	-0.027	-0.020
	(0.021)	(0.025)	(0.026)	(0.022)	(0.023)	(0.018)	(0.020)
Observations	1577	1577	1577	1577	1566	1577	1576
Panel 4: Urinary Tract Infection							
Pads	-0.111	-0.195**	0.011	-0.167	-0.126	-0.118	-0.090
	(0.086)	(0.079)	(0.114)	(0.122)	(0.119)	(0.087)	(0.105)
Pads × Worker Char.	-0.042	0.185	-0.192	0.049	0.000	-0.025	-0.066
	(0.130)	(0.137)	(0.140)	(0.144)	(0.142)	(0.128)	(0.134)
Info	-0.087	-0.189**	-0.136	-0.141	-0.061	-0.135	-0.150
	(0.088)	(0.079)	(0.100)	(0.119)	(0.123)	(0.084)	(0.099)
Info × Worker Char.	-0.118	0.129	-0.018	-0.006	-0.108	-0.017	0.006
	(0.127)	(0.134)	(0.127)	(0.140)	(0.144)	(0.127)	(0.130)
Pads × Info	0.151	0.166	0.136	0.210	0.035	0.141	0.152
	(0.117)	(0.105)	(0.150)	(0.157)	(0.165)	(0.114)	(0.138)
Pads × Info × Worker Char.	-0.059	-0.131	-0.012	-0.123	0.115	-0.035	-0.041
	(0.169)	(0.179)	(0.181)	(0.187)	(0.194)	(0.171)	(0.175)
Worker Characteristic	0.049	-0.070	0.175	-0.123	0.101	0.119	0.028
	(0.110)	(0.115)	(0.110)	(0.117)	(0.119)	(0.099)	(0.106)
Observations	1577	1577	1577	1577	1566	1577	1576
Panel 5: Wellbeing at Work							
Pads	-0.009	0.023	0.087	0.037	0.164	0.111	0.054
	(0.092)	(0.082)	(0.136)	(0.133)	(0.121)	(0.093)	(0.115)
Pads × Worker Char.	-0.019	-0.118	-0.141	-0.077	-0.241*	-0.261**	-0.112
	(0.132)	(0.136)	(0.154)	(0.152)	(0.143)	(0.130)	(0.140)
Info	-0.001	0.051	0.072	-0.004	0.081	-0.029	0.100
	(0.096)	(0.085)	(0.113)	(0.127)	(0.112)	(0.086)	(0.113)
Info × Worker Char.	0.016	-0.119	-0.089	0.018	-0.083	0.077	-0.144
	(0.132)	(0.133)	(0.138)	(0.147)	(0.137)	(0.131)	(0.141)
Pads × Info	0.188	-0.056	0.006	-0.041	-0.152	-0.047	-0.014
	(0.140)	(0.115)	(0.190)	(0.183)	(0.163)	(0.127)	(0.166)
Pads × Info × Worker Char.	-0.262	0.309	0.077	0.147	0.292	0.221	0.118
	(0.185)	(0.195)	(0.218)	(0.212)	(0.198)	(0.188)	(0.203)
Worker Characteristic	-0.044	0.118	0.147	-0.099	0.074	-0.038	0.073
	(0.111)	(0.118)	(0.119)	(0.119)	(0.108)	(0.097)	(0.105)
Observations	1577	1577	1577	1577	1566	1577	1576

Table C.1: Further Heterogeneity Analysis - Continued

	(1) Age	(2) Years Schooling	(3) Lives w. Husband	(4) Children	(5) Migrant	(6) Tired dur. Period	(7) Dry Pads Inappr.
Panel 6: Absent Days							
Pads × Post	0.046	-0.050	-0.066	0.091	-0.089	-0.035	-0.072
	(0.082)	(0.065)	(0.114)	(0.113)	(0.120)	(0.069)	(0.079)
Pads × Post × Worker Char.	-0.181**	0.015	0.028	-0.189	0.064	-0.020	0.044
	(0.092)	(0.104)	(0.118)	(0.116)	(0.124)	(0.092)	(0.089)
Info × Post	-0.048	-0.082	-0.087	-0.061	-0.117	0.012	-0.100
	(0.070)	(0.065)	(0.086)	(0.081)	(0.085)	(0.077)	(0.089)
Info × Post × Worker Char.	-0.021	0.063	0.038	0.004	0.082	-0.149*	0.065
	(0.083)	(0.088)	(0.091)	(0.088)	(0.091)	(0.082)	(0.095)
Pads × Info × Post	0.147	0.106	0.276*	0.187	-0.006	0.040	0.258**
	(0.115)	(0.094)	(0.152)	(0.150)	(0.154)	(0.109)	(0.121)
Pads × Info ×Post× Worker Ch.	-0.073	0.016	-0.211	-0.116	0.140	0.156	-0.226
	(0.143)	(0.157)	(0.168)	(0.166)	(0.169)	(0.144)	(0.146)
Observations	29751	29751	29751	29751	29563	29751	29732
Panel 7: Earnings							
Pads × Post	41.538	-20.725	-36.693	-68.004	-37.669	-54.192	48.447
	(71.918)	(59.220)	(86.423)	(86.616)	(76.004)	(63.802)	(82.881)
Pads × Post × Worker Char.	-63.244	86.814	60.150	108.403	69.972	131.086*	-62.318
	(77.038)	(83.435)	(89.458)	(89.382)	(84.116)	(77.008)	(88.210)
Info × Post	154.592**	49.727	92.219	-6.304	130.639*	83.677	96.896
	(69.762)	(59.575)	(79.211)	(83.410)	(68.130)	(61.764)	(80.072)
Info × Post × Worker Char.	-110.937	129.875	7.582	150.825*	-40.375	29.999	-1.413
	(74.932)	(79.496)	(82.689)	(85.402)	(75.840)	(75.631)	(85.066)
Pads × Info × Post	-227.441**	-58.810	97.477	25.559	87.470	-26.999	-223.912*
	(113.955)	(91.093)	(141.220)	(143.762)	(114.873)	(98.302)	(129.064)
Pads × Info ×Post× Worker Ch.	280.229**	-83.626	-238.077	-157.764	-227.725	-122.736	217.645
	(135.265)	(143.755)	(157.224)	(158.417)	(138.399)	(135.545)	(147.941)
Observations	29751	29751	29751	29751	29563	29751	29732
Panel 8: Turnover							
Pads	0.181	-0.164	-0.310	0.055	-0.212	-0.014	-0.221
	(0.178)	(0.171)	(0.264)	(0.210)	(0.254)	(0.192)	(0.228)
Pads × Worker Char.	-0.404	0.464	0.438	-0.056	0.317	0.042	0.371
	(0.276)	(0.285)	(0.309)	(0.276)	(0.303)	(0.272)	(0.286)
Info	-0.027	-0.297*	-0.042	0.002	-0.337	-0.470**	-0.264
	(0.184)	(0.178)	(0.239)	(0.205)	(0.260)	(0.210)	(0.230)
Info × Worker Char.	-0.225	0.438	-0.115	-0.240	0.311	0.632**	0.230
	(0.281)	(0.289)	(0.294)	(0.279)	(0.308)	(0.282)	(0.290)
Pads × Info	-0.084	0.073	0.069	-0.215	0.163	0.467*	0.292
	(0.251)	(0.258)	(0.372)	(0.293)	(0.384)	(0.281)	(0.323)
Pads × Info × Worker Char.	0.406	-0.083	0.039	0.509	-0.144	-0.694*	-0.322
	(0.393)	(0.396)	(0.436)	(0.391)	(0.446)	(0.389)	(0.403)
Worker Characteristic	-0.169	-0.129	-0.323	-0.533***	-0.136	-0.063	-0.298
	(0.195)	(0.209)	(0.205)	(0.197)	(0.214)	(0.194)	(0.206)
Observations	1577	1577	1577	1577	1566	1577	1576