C A G E

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

CAGE working paper no. 653

February 2023

Kristina Czura,
Andreas Menzel,
Martina Miotto

WARWICK
THE UNIVERSITY OF WARWICK

UKRI Economic and Social Research Council

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

Kristina Czura†, Andreas Menzel ‡, Martina Miotto§

February 2023

Abstract

Menstruation can limit female labor force participation, especially in low-income countries, where menstrual hygiene practices are constrained by lack of finances and information. 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. Both access to sanitary pads and information improve menstrual practices, either by the adoption of new technologies, 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

* We are grateful to Oriana Bandiera, Alessandra Cassar, James Fenske, Selim Gulesci, Marcos Vera-Hernandez, Jonas Hjort, Wendy Janssens, Seema Jayachandran, Martin Kanz, Sharun Mukhand, Eric Plug, Maria Polyakova, Petra Persson, Rebecca Thornton, Séverine Toussaert, Alessandra Voena, Christopher Woodruff, and seminar participants at LMU, CERGE-EI, Aarhus University, PEDL PhD Workshop, Firms and Markets in Development Workshop 2019 (Syracuse, IT), EPED Workshop 2019 (Boston), DENeB Worshop 2019 (Berlin), 1st Conference of PSD Research Network 2019 (Geneva), RCT Conference 2019 (Monash), II Padova Applied Economics Workshop 2020, VfS Annual Conference 2020 (Cologne), ADBI-BMGF-IFS Workshop on Sanitation and Development 2021 (Tokyo), Applied Economics Conference: Labour, Health, Education and Welfare 2021 (Belgrade), and GIGA Hamburg 2021 (Hamburg) for many valuable comments. We thank the staff from Consiglieri BD Ltd. for managing the field work, and Silvia Fernandez Castro for providing excellent research assistance. Financial support by PEDL through ERGs 5549 and 6035, Deutsche Forschungsgemeinschaft through CRC TRR 190 (project number 280092119) and from GA CR Standard Grant 17-26395S is gratefully acknowledged as well as institutional support RVO 67985998 from the Czech Academy of Sciences. The trial was registered at the AEA RCT registry under RCT ID AEARCTR-0003298.

†University of Groningen, k.czura@rug.nl
‡CERGE-EI, Prague. Corresponding Author: andreas.menzel@cerge-ei.cz
§CERGE-EI, Prague, and CAGE (University of Warwick), martina.miotto@cerge-ei.cz

1 Introduction

Female labor force participation has been shown to increase women's socio-economic well-being (Heath, 2018; 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 on the one hand, and for labor market participation, both at the extensive and the intensive margin, on the other hand.[1]

In low-income countries the effects of menstruation on working women may be particularly pronounced, due to lack of access to hygiene products and lack of knowledge on menstrual health management. Many women in these countries use basic materials, such as cloth, cotton, paper, sponges, leaves, or ash during their periods (Sumpter and Torondel, 2013; Loughnan et al., 2016; van Eijk et al., 2016), which pose health risk if not treated hygienically (McMahon et al., 2011; Crichton et al., 2013). The consequences are increased risk of infections (Das et al., 2015; Torondel et al., 2018), other health problems (Ahmed and Yesmin, 2008; Sumpter and Torondel, 2013; Hulland et al., 2015; Garikipati and Boudot, 2017; Kaur et al., 2018), and absence from work (WSSCC, 2013). While the use of hygienic menstrual products such as disposable sanitary pads has been associated with reducing these adverse effects, their use is not widespread.[2] This is usually attributed to lack

[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 such an effect using data on teachers in the U.S.A.

[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.

of knowledge about their benefits and to their high costs (van Eijk et al., 2016; Garikipati and Boudot, 2017), but systematic evidence on both aspects is scarce.

Existing, well-identified studies on the effects of menstrual health management have focused on whether financial constraints limit the adoption and use of new menstrual products and whether downstream outcomes improve through technology adoption after providing access to modern menstrual products. However, these studies, that mostly focus on school-aged girls and effects on educational outcomes, usually do not address both informational and financial constraints for technology adoption separately, or how they interact (El-Gilany et al., 2005; Oster and Thornton, 2011; Alam et al., 2017; Girod et al., 2017; van Eijk et al., 2016; Benshaul-Tolonen et al., 2021, 2020; Khanna, 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 washing it with clean water and soap and drying it outside in the sunlight to disinfect it. Yet, they are often neither washed nor dried properly due to widespread taboos surrounding menstruation (Nemade et al., 2009; Arora et al., 2013; ICDDR, 2014). Improving the hygienic use of traditional materials, such as reusable cloth, could be a more cost-effective alternative to promoting adoption of novel menstrual products, such as sanitary pads. These are typically more expensive than traditional materials and may require subsidizing their use permanently or, at least, initially.

In this paper, we unpack both informational and financial constraints to hygienic menstrual health management (henceforth MHM), and present results on how relieving both constraints affects MHM practices, health and well-being, and labor outcomes. Using a randomized controlled trial with around 1,900 low-income, female garment workers from four Bangladeshi garment factories, we exogenously relax financial and informational constraints individually and jointly. Our *Info* treatment comprises attendance at a one-hour information session on menstrual health led by an expert local NGO that stresses the impor-

tance of either using improved material, such as disposable sanitary pads, or hygienically using traditional material, such as reusable cloth. Our *Pads* treatment provides a monthly ration of free hygienic disposable pads for around half a year. Finally, our *Pads & Info* treatment includes both. We first analyze how our interventions affect workers' adoption of pads, knowledge, and more hygienic approaches to traditional MHM materials. Then we 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 suffers from substantial worker absenteeism and turnover.[3] Given the importance of the garment sector for driving Bangladesh's rapid economic development and improving women's socio-economic conditions (Heath and Mobarak, 2015), our study addresses both major operational constraints of this important sector and health needs of its large female workforce. Second, the garment factories in our sample collect detailed data on earnings, worker turnover, and daily attendance for each worker. Third, women in our sample have limited access to accurate information and hygienic menstrual products, and there is scope for improvement of both: 42 percent use disposable sanitary pads at least somewhat regularly at baseline, while the rest use traditional menstrual materials such as cloth, rags, or tissues.[4] Only nine percent of our

[3]In a sample of 70 large garment factories in Bangladesh employing around 108,000 sewing workers, Menzel and Woodruff (2021) find that 73 percent of all workers are female, average daily absenteeism rate is four percent among female workers, and monthly worker turnover rates is five percent. Qualitative evidence from Bangladesh suggests that a significant share of absenteeism is due to unhygienic MHM practice (WSSCC, 2013).

[4]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).

surveyed workers agree that menstruation is a regular body function and only around half know how to treat traditional material, such as cloth, hygienically.

We base our analyses and presentation of results on the following hypothetical causal chain: Each treatment could improve MHM practices; providing access to free sanitary pads could increase adoption of these new, hygienic menstrual products, while providing information on MHM could also support the adoption of modern products, or foster hygienic use of traditional materials. Improved MHM practices could in turn increase health and well-being, and, ultimately, lead to better labor outcomes, i.e., absenteeism, earnings, and worker turnover.

We have the following main results. First, both treatments were successful in relaxing constraints: Providing free sanitary pads increased reported pad usage by around 17 percentage points (23 percent), and providing information increased the share of workers answering key MHM questions correctly six months after the sessions were held by around six percentage points (nine to 65 percent, depending on the knowledge question). Information also lead to improvements in traditional MHM practice, such as drying cloth outside after washing. However, information on its own did not increase sanitary pad use, nor were pad use rates higher in the group receiving both free pads and information than in the group receiving only free pads. 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 (henceforth UTIs). However, both treatment arms do not reinforce each other. UTIs are a major health risk of unhygienic MHM (Das et al., 2015; Torondel et al., 2018; Ahmed and Yesmin, 2008; Sumpter and Torondel, 2013; Das et al., 2015; Kaur et al., 2018) and are related to absence from work (WSSCC, 2013). Third, however, we do not detect any changes in self-reported well-being at work, or on work absenteeism, earnings, or the likelihood of leaving the factory.

Seen in light of our potential causal chain laid out above we find significant effects for the first step on improved MHM, as well as for the second step on health outcomes, but not for the third step on labor outcomes. This may not be too surprising in this high pressure work environment where no wage is paid for missed days at work. Outcomes further down the causal chain may hence be exposed to too many competing factors to be affected by our inventions in a meaningful way. Our results also imply that supporting workers in improving traditional health practices may be a less costly, and at least as effective, way to improve health outcomes as advertising new health products, such as sanitary pads.

Our study contributes to three strands of literature. First, we contribute to the literature on health behavior, in particular in low-income countries (see Dupas (2011b) for an overview). This literature has documented low levels of health investments and has identified financial constraints and informational constraints as key limiting factors.[5] However, the evidence on whether information actually leads to health benefits is mixed: While Haggerty et al. (1994) find that promoting hand washing through information campaigns reduces diarrhoeal diseases, Galiani et al. (2016) find that information campaigns improve knowledge about hand washing benefits, but do not improve health outcomes. The type of information provided seems to be important: Emotional motivations such as nurture or disgust helped to promote hand washing in India (Biran et al., 2014); while standard hygiene instructions only promoted hand washing when accompanied by a module that also addressed traditional health beliefs in Pakistan (Bennett et al., 2018). More recent studies analyze how behavioral factors restrict health behavior, such as present bias limiting preven-

[5]Financial constraints are revealed by very price-elastic demand for preventative health care, as has been documented, for example, for deworming medication (Kremer and Miguel, 2007), bed nets to prevent malaria (Cohen and Dupas, 2010), or water-filters to prevent water-borne diseases (Ashraf et al., 2010). Relaxing informational constraints has been shown to improve health behavior. For example, providing information on unsafe drinking water helped to avoid these sources (Madajewicz et al., 2007; Jalan and Somanathan, 2008) and information on the risk of HIV infections has lead to a substantial reduction in teen pregnancies (Dupas, 2011a).

tative doctor visits (Bai et al., 2021) and habits limiting adoption of hand washing practices (Hussam et al., 2022). We contribute to this literature by systematically disentangling the roles of financial and informational constraints. We find that alleviating both constraints improves health outcomes, but they are strategic substitutes and work through different channels: Removing financial constraints improves health outcomes by fostering adoption of new health products; removing informational constraints improves health outcomes by improving traditional health practices.

Second, we contribute to a growing literature on the importance of improved MHM for economic outcomes, which so far mainly focuses on educational outcomes among adolescent girls (see Montgomery et al. (2016) for a systematic review). The evidence is mixed and seems to depend on the context and the offered menstrual product. For example, Montgomery et al. (2012) find indications for improved attendance among school girls who received free sanitary pads in rural Ghana; Agarwal et al. (2022) find substantially decreased dropouts and increased school-leaving exam performance among girls in Indian primary schools with access to free sanitary pads; Benshaul-Tolonen et al. (2021) find decreased school absenteeism for providing sanitary pads in Kenya, but not for providing menstrual cups. The latter is in line with Oster and Thornton (2011) who also find no substantial improvements in school attendance for girls who received menstrual cups in a randomized controlled trial in Nepal, partially due to a very low baseline level of days missed at school in their setting. Krenz and Strulik (2021) offer a notable exception with a study on working women from a developing country. Using propensity score-matching, they find less work 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 using a randomized trial. While we find improvements in health outcomes, we

do not find robust improvements on absenteeism, earnings or worker turnover which may be due to different consequences of absenteeism in workplace and school settings.

Lastly, we speak to the literature on the determinants of labor productivity which has identified negative effects of poor health, and positive effects of preventive health measures, on labor outcomes (see Dupas and Miguel (2017) for an overview). For example, Fink and Masiye (2015) show large positive effects of preventative health investments - in the form of access to free bed nets to reduce malaria - on agricultural production; Dillon et al. (2021) show that information about malaria infections and treatment increase workers' earnings, and Adhvaryu et al. (2022) show that air pollution in garment factories in India decreases worker productivity. However, this work suffers from difficulties with measuring output at work, in particular in agriculture (Fink and Masiye, 2015), from difficulties with providing access to health care (Dillon et al., 2021), or from limitations to observe endogenous health behavior among study subjects in reaction to exogenous changes in health risks (Adhvaryu et al., 2022).[6] Our design allows us to overcome these shortcomings: We exogenously vary access to health care, we can measure labor outcomes accurately, and we identify changes in individual health behavior and how these translate to changes in labor 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.

[6] Adhvaryu et al. (2022) use natural variation in exposure to pollution and while they can identify the effects of different levels of health hazards on productivity they cannot address workers' responses in health behavior.

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 substantial worker absenteeism and turnover, which reduces their productivity by disruptions to the production process and 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 70 garment factories, while Macchiavello et al. (2020) report absenteeism rates of 6.5 percent in a sample of 24 factories.[7] Garment workers typically start working in the sector at the age of 18 to 20, and female workers largely leave the sector before they turn 30. One reason for that may be that unlike men, they have few opportunities to advance beyond basic sewing machine operator positions, e.g. to supervisor, quality inspector, or mechanic positions (Macchiavello et al., 2020). The sector is concentrated around the two largest cities of the country, Dhaka and Chittagong, and the majority of workers migrate to these industrial areas from the countryside. Factories are mostly locally owned and managed, and contract with international brands for the production of garments such as t-shirts, dress-shirts, pants, or jackets. The Bangladeshi garment sector pays among the lowest wages compared to other garment sectors in the world (ILO, 2014, 2016). Starting wages in the sector for both men and women without higher education or sector specific experience is around US$ 70 to

[7] 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.

90 per month to work for six days per week and eight to twelve hours per day, depending on overtime run by the factories. An experienced sewing machine operator can earn up to around US$ 150 per month, depending again on overtime worked.

For this trial, we work with four factories in Bangladesh which expressed interest in participation and employ around 1,000 to 2,000 female workers each. Two factories nominated 200 female workers each for the trial, while the third nominated 600, and the fourth around 900.[8] The trial was implemented in two phases due to logistical and financial 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). At the fourth factory, free pads were distributed from October 2019 to March 2020 (Phase 2).

2.2 Data

Our data come from two sources: Administrative personnel records and survey data. First, our four partner factories employ modern, computer based HR payroll-systems which record for each worker and month the number of days workers were sick, absent for other reasons, their overtime hours, their base wage and their actual paid-out wage. Overtime is then added to the wage at 150 percent the base (non-overtime) hourly wage rate, while wage is subtracted for days workers were absent. We obtained administrative data from around half a year before the implementation of our treatments until around one and a half year after. For the factories of Phase 1 the time covered by the data ends just before the onset of Covid-19 pandemic in March 2020, while for Phase 2, post-treatment data was collected until February

[8]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, compared to non-nominated female workers. However, they work 1.8 more overtime hours per month (p-val < 0.01).

2021. Second, survey data were collected from all workers in a baseline survey before the intervention started and in an endline survey after six months of pad distribution. At the first three factories baseline and endline surveys were done in person at the factory. We attempted to survey workers by phone at endline who could not be surveyed at the factory because they had either left the factory in the meantime, or were absent on the days of the surveys. At the fourth factory, while baseline surveys were again done in person at the factory, endline surveys were entirely done by phone due to the onset of the Covid-19 pandemic in March 2020.

2.3 Sample

Table 1 summarizes characteristics of the 1,577 female workers who form the main sample for our analyses, as all core outcome variables are available for them.[9] Workers are on average 26 years old and report to have spent on average 6.1 years in school. Eighty-five percent report to be married and 69 percent to have children. Seventy-six percent live with their husband, 18 percent with their parents, nine percent with their in-laws, and 12 percent alone (note, these states are not mutually exclusive). Our sample is comparable with respect to these characteristics to a broader sample by Menzel and Woodruff (2021) of around 1,600 randomly-drawn female sewing operators from 70 other factories in Bangladesh and hence quite representative of the Bangladeshi garment sector. 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"). Given on average 25 production days per months, this implies that 2.4 percent of female workers are absent

[9]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.

on an average working day, a somewhat lower rate than found in other garment export factories in Bangladesh (or India), as mentioned at the beginning of this section.

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 it, 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).[10] 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).[11]

With regard to knowledge on menstrual health and hygiene, only around nine percent answer that periods are a natural phenomena 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 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 new materials, such as disposable pads: At baseline, 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 the following consequences of menstruation on labor outcomes: 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

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

[11] 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).

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.[12] Menstruation does negatively affect subjective well-being at work: 81 percent of workers in our sample 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.[13] 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. The medical rooms were chosen as collection points because they are well known by the workers and close to their workplace, so they could be reached easily during work breaks, and they provide privacy for the workers. The distribution workers, who

[12]Note however, that no factory staff was allowed into the rooms in which we conducted the surveys 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 privacy while answering survey questions. Meanwhile, qualitative evidence from other studies suggest a sizable share of absenteeism due to inferior menstrual products (WSSCC, 2013; SNV, 2014).

[13]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 not randomized into this treatment, which would cause spillovers that could downward 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 (specifically, eight pads would be just the right amount for around 15 percent of the workers and too few pads for around 50 percent). The duration in which we distribute pads is only six months for the factory in Phase 2, as the last two planned months of distribution were cut short by the nationwide shut-down in response to the Covid-19 pandemic beginning in late March 2020.

were employed by the research team for the project, checked the eligibility of the workers to receive pads, and handed out the pack of pads. The distribution days were communicated on the voucher cards and varied somewhat across the four factories: At the two factories that nominated 200 workers for the trial, the pads could be collected on the same two week-days each week. At the third factory that nominated 600 workers, they could be collected on four week-days per week. Finally, at the fourth factory which nominated 900 workers, free pads could be collected on any week-day in order to keep the number of pad distribution days proportional to the number of workers in the factory eligible for receiving pads.

We hypothesize that our *Pads* treatment relaxes financial constraints and increases the use of pads, which reduces infections, increases comfort and subjective well-being and, potentially, improves worker absenteeism and earnings. Further, worker turnover may be reduced, possibly due to improved health or workers' appreciation of the free pads, implying that factory-specific production knowledge may be retained at a higher rate.

The second treatment group, the *Info* treatment, comprised attendance to a one-hour information and awareness session conducted by female staff of an expert local NGO, which has conducted such sessions for many years in other garment factories in Bangladesh. 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. Workers were instructed by the factory managements to attend the sessions, and the time spent attending them was paid as usual work time. Thus, only workers absent from work on the days the sessions were held did not attend 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 was covered, as was the proper use of traditional materials such as reusable cloth. Regarding the first, information on hygiene, comfort, superior absorbency and environmental impacts

was provided and it was explained how to unpack the disposable pad, and how to wear it correctly. Regarding the latter, it was stressed that reusable cloth needs to be washed with water and detergent after its use and dried in the sun after in order to disinfect it. 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 and we see two ways in which it may affect health and labor outcomes. On the one hand, our information treatment may increase the adoption of pads which may affect labor and health outcomes as laid out above for the *Pads* treatment. On the other hand, it may improve the hygienic use of traditional material, such as reusable cloth, which may reduce infections and hence improve these outcomes.

The third treatment group, the *Pads & Info* group, received both the information training session and access to the monthly ration of free sanitary pads for the intervention period. Potential effects in this treatment may unfold through the provision of pads, improved information, or both.[14] The interaction of both interventions helps us to understand whether information and pads are strategic complements or substitutes for promoting adoption of new menstrual materials or for downstream outcomes such as health and labor outcomes. The fourth group is the *Control* group that neither received information nor access to free pads. All workers in the sample who did not receive access to free pads received a placebo present (beauty kit) of comparable value, to counteract any potential wealth effect on our

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

outcome measures. Individual workers were randomized into one of the four groups and the randomization was stratified at the level of the four participating factories.[15]

Treatment Uptake

The uptake of the information treatment was near perfect, as the information sessions were held during work time, with the factory management instructing the 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 during the six to eight months of distribution at the different factories. 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.[16]

[15]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.

[16]We can only speculate why collection rates at Factory 2 were lower. Despite qualitative work and careful planning involving both workers and factory management, and careful monitoring by our research team, the factory management suspected after the trial had ended that collection location and times were after all not convenient for the workers. Meanwhile, the drop in collection rates at Factory 1 in December is due to unrest in the industrial area surrounding this factory, with the unrest leading to the closure of the factory for more than a week. Data from this factory-month is excluded in the subsequent analyses of the administrative data. As already stated in the previous section, distribution of pads at Factory 4 stopped earlier than planned, after March (2020), due to the onset of the Covid-19 pandemic.

Experimental Balance

Our sample is well balanced on observable worker characteristics from the baseline survey and the administrative data. 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 five percent level or above for two variables, and at the 10 percent level for two further variables, 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

Following our potential causal chain, we present three sets of results: First, we show that free pad distribution increased pad use rates, while the information treatment increased MHM knowledge and led to more hygienic use of traditional MHM materials. Second, we show how they affect worker health and well-being. Finally, we test if these effects trickle down to labor outcomes, using administrative HR data.

The substantial number of outcomes we present, as well as our three treatment groups, warrants adjusting the p-values of effect estimates for multiple hypotheses testing. We do so by first creating indices for any latent outcome 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 treatments groups for the outcomes of pad adoption, indices for menstrual health knowledge, menstrual health behavior, worker health, worker well-being, and work absen-

teeism, earnings, and turnover. That is, we adjust the p-values for three coefficients times nine primary outcomes, or 27 primary tests.[17]

4.1 Menstrual Health Practices and Knowledge

Pad Adoption

We start by studying whether provision of free pads, information, or both, leads to increased use of pads. We note that the endline survey in which we collect the pad use data is done during or just after the last month of distribution of free pads. Thus, increased pad use among workers randomized into the free pad treatment arm would be consistent with these workers reporting higher use because they collect and use the free pads.

Table 2 shows the effects of the treatment arms on self-reported pad use in the endline survey. Pad use was asked on a four-point Likert scale, whether the worker uses pads "always", "often", "sometimes", or "never". To better interpret our results, we define a dummy variable taking value one for using pads "always" or "often", and zero for "sometimes" or "never" as our main outcome variable for pad usage.[18] Column 1 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 in the *Info* treatment 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

[17]We also include long-run pad adoption in the adjustment, an outcome we discuss at the end of the results section. 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.

[18]Our results are robust to using the four-point Likert measure directly and estimating the treatment effect by ordered probit.

exceedingly small (0.5 percent), suggesting that the two treatments do not interact in their effects on pad use.[19] The results control for a battery of worker characteristics as lined out in the notes of the table, including baseline pad use. As should be expected, the results are driven by workers who report to not having used pads at baseline. Among these workers, those with free access to pads are 28 percentage points (46 percent) more likely to report using pads at endline, while the effects on receiving information, or the interaction effect of the two treatments remain statistically insignificant.[20] We conclude that financial constraints are limiting pad use, while lacking information on the advantages of disposable pads does not seem to play a role in the decision to use these. The lack of effects of the information treatment alone on pad adoption may be less surprising given that, as shown above, most workers answered knowledge questions about sanitary pads correctly at baseline (as opposed to knowledge questions about the proper use of traditional materials such as cloth).

Knowledge Gains

Next, we study how our treatments affect aspects of MHM knowledge discussed in the information sessions, as elicited in the endline survey around half a year after the sessions, 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 cloths are dried in the sun after washing (due to the disinfectant properties of UV light - Column 2).

[19]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.

[20]The coefficients on the free pad treatment in Table 2 are robust to applying Lee bounds to address attrition of workers from the sample (Lee, 2009). As we discuss in more detail in Section 5, we do not detect attrition patterns in our data that are likely to induce bias in our results.

Workers who were invited to an information session (but did not receive free pads) 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 cloths need to be dried outside. We also find a similar effect on the first question among workers who received free 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). In an equally weighted summary index over the two responses we find significant effects for those who received the information or both treatments. In principle, using disposable sanitary pads could also increase knowledge, in particular on the benefits of this menstrual material. However, we do not see an effect on the index for workers who only had access to free pads, but not the information session. Finally, in particular on the aggregate knowledge index, we see again only a very small and statistically insignificant interaction effect of the two treatments.

Health Behavior

We next test whether the significant first stage results translate into further behavior changes. In particular, we test whether workers in the information treatment arm adopt the practices taught in the information sessions. The information sessions particularly stressed that adequate menstrual health care can be achieved with various methods, modern products such as pads or traditional materials such as reusable cloth, but that any method needs to be used in a hygienic manner. Given that we already showed that the information sessions had little effect on use of sanitary pads, we focus in Table 4 on whether traditional menstrual health practices are used hygienically, i.e. whether workers properly wash and dry reusable cloth. We note that in the endline survey, 40 percent of workers still report using cloth or rags, down from 61 percent at the baseline survey. As discussed in Section 3, a major constraint to the proper washing and drying of reusable cloth is that it is traditionally

considered a taboo in our setting for these cloths to be visible to anyone else during the washing and drying process. However, the information sessions stressed in particular the need for cloth to be dried in the sun due to the disinfecting properties of the UV light.

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. The coefficient of the free pad treatment is positive, but small and insignificant, as we may expect given that this treatment does not concern the use of other MHM methods. Meanwhile, 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 smaller in magnitude, both treatment effects cannot be distinguished statistically. Finally, an equally weighted index of the two behavior variables, washing cloth and drying cloth outside, closely reflects the results we obtain when looking only at drying cloth, with a highly significant positive effect of the information treatment on the index (Column 3).

To summarize the first set of results, workers who received free pads are more likely to use pads by the endline survey, while workers who attended the information session are more likely to answer questions on MHM correctly, especially on the hygienic use of traditional materials. All of these effects, of free pad access on pad use and of information sessions on the indices for knowledge and traditional practices, remain statistically significant after multiple hypotheses adjustment, as shown in Table B.1. We see no "cross-effects" of free pads on knowledge or traditional practices, or of information provision on pad use, nor do we find positive interaction effects of the treatments on pad use, knowledge or

traditional MHM practices. It thus appears that relaxing informational constraints fosters hygienic MHM practices and relaxing financial constraints is sufficient to increase pad use. In subsection 4.5 we provide suggestive evidence that financial constraints are binding for initial adoption and experimentation with pads rather than for their continued use. Following again our hypothetical causal chains, in the next section, we test whether the increased used of sanitary pads by workers in the free pad treatment, as well as the improved use of more traditional materials in the information treatment, affects worker health and well-being.

4.2 Worker Health and Well-being

Urinary Tract Infections

We first 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 1-3 (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, if any, they lost due to the infection. Recognising that workers may have had UTIs without being aware of it, i.e. without a diagnosis by a doctor, we asked in Phase 2 instead for common symptoms of UTIs, such as 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 1-5 of Table 5. Both our main 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 general occurrence of UTIs, and urinating more often than usual, as shown in Columns 1 and 5, are the coefficients statistically

significant, particularly for the information treatment, which reduces the incidence of these symptoms by around 50 and 39 percent.

Nonetheless, significance may be spurious given the larger number of tests shown in the table. Alternatively, coefficients may not be significant if individual symptoms are only noisy measures of actual UTIs. We therefore create an Anderson index following Anderson (2008) over the five outcomes.[21] As for the other variables in the table, a negative coefficient on the index indicates an improvement in health. As shown in column 6 of Table 5, both treatments have significant effects on the index, which is reduced 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). Meanwhile the effects of both treatments do not seem to be additive: The interaction effect of *Pads* and *Info* is almost exactly offsetting the reduction in UTIs by *Pads*.

Self-reported Well-being

Table 6 shows the results on nine questions we asked workers about their subjective well-being at work during the days of their period. We ask whether they feel more tired during these days (Column 1), struggle more to reach their work-target (Column 2), feel more energetic (Column 3), feel more ashamed (Column 4), worry about leakage of the absorbent (Column 5) or odor (Column 6), feel more alone (Column 7), easily irritated (Column 8), or whether they missed more worktime (Column 9). We do not find effects on these outcomes, and neither on an Anderson index aggregating the responses of the nine outcomes, as shown in Column 10 of the table. All outcomes in this table have been coded such that positive coefficients imply higher well-being, which thus also holds for the index

[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.

in Column 10. The absence of effects on well-being may be surprising given the significant effects on UTIs that we discussed in the previous subsection. Our well-being measure may be, however, rather complementary to physical health, as captured by UTIs. The outcomes in columns 4 to 7 of Table 6 such as fear of leakage or odor, and associated feelings of shame are rather related to the societal stigma placed on any occurrence in which having ones period cannot be hidden from public. Meanwhile feelings of tiredness, or irritation, may occur even if graver health risks such as UTIs are reduced.

To summarize our second set of results, we note that our treatments were able to reduce specific important physical health risks associated with poor MHM, either by fostering the adoption of modern products or the hygienic use of traditional material, but not the entirety of the broad and complex spectrum of social, physiological and psychological effects it has on menstruating people. 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, 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 18 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 groups.

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 looses statistical significance at the conventional levels when adjusting for multiple hypotheses testing (Table B.1). Figures A.2 and A.1 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. Thus, we do not find evidence that the positive effects of the *Info* and *Pads* treatment arms on MHM behavior and self-reported health translate into fewer missed days at work, increased earnings, or reduced chance of exiting the current 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 to women be more knowledgeable about MHM and to use traditional cloth more hygienically. We detect no "cross effects" between the treatment arms regarding menstrual health behavior. Workers receiving both treatments increase their pad use and use traditional materials more hygienically. Both observed changes in health behavior translate to better health outcomes. However, both treatments do not complement each other. Offering free access to pads, information on hygienic MHM, or both, improves health outcomes to a similar extent, suggesting that using modern MHM products and traditional MHM materials hygienically are 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, depending on how the pads are distributed.

The improvements in health outcomes, however, do not trickle down to labor outcomes. While the estimated coefficients of the treatment arms have the expected sign, none of the effects are statistically significant after adjustments for multiple hypotheses testing (MHT). There are three potential explanations. 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 these outcomes may be subject to many competing determinants. 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 very high, possibly inducing them to try to miss as few days as possible due to period problems.[22] 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 the control group (see Section 5.4 for more details). This may have reduced the strength of effects further down in our causal chain on labor outcomes that the treatments could generate.

Taking the MHT adjustment into account, our minimum detectable effect on absenteeism was a 24 percent reduction relative to the rate in the control group of 2.4 percent.[23] Meanwhile, Menzel and Woodruff (2021) and Macchiavello et al. (2020), in larger samples of 70 and 24 factories in Bangladesh, respectively, find higher average absenteeism rates of four to 6.5 percent, which informed our initial power calculations and suggested minimum detectable effects (MDE) on absenteeism of 13 percent of baseline rates. In light of estimates

[22]Even more, workers get a monthly bonus of typically five percent of their monthly wages if they miss no days of work in a given month.

[23]The 2.4 percent are obtained by dividing the average number of missed days in the control group of 0.596 by 25, the average number of working days per month. We calculate minimum detectable effects with the formula $2.5 \times$ *Std.Error / Control(mean)*, using the standard errors and control means displayed in the tables. The t-statistic of 2.5 is associated with a p-value of 1.2 percent, which would translate into a p-value of about 5 percent in our MHT adjustment.

of NGOs active in the sector that over 20 percent of female workers are absent due to lacking menstrual hygiene (SNV, 2014) or miss several days of work per month due to UTIs (WSSCC, 2013), statistical power to detect reductions in absenteeism of 13 percent, or even 24 percent, seem reasonable. We were furthermore powered to detect economically meaningful increases in monthly earnings as low as 1.3 percent (around US$ 1.57) after MHT adjustment. If we assume that effects on worker income represents a lower bound to effects on social welfare (as additional productivity gains of the intervention may be captured by the factories and not passed through to wage increases), then at that MDE, the cost of the intervention of US$ 2 to 4 for the information sessions or free pads, respectively, would have been amortized within two to three months or faster. The marginally significant increase in earnings due to the information provision (before the MHT adjustment) suggest an effect of 0.95 percent on earnings, or around US$ 1.16, which falls somewhat short of the MDE.

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 142 and 151 workers from each of the treatment and control groups.[24] While the survey focused on the worker's experience during the Covid-19 pandemic in the country, we also asked workers again which materials they used to manage their menstruation at that point in time. This allows us to study how sustainable our interventions are for the adoption of modern MHM products several months after the provision of free sanitary

[24]The workers that we reached in this additional phone survey 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 baseline MHM knowledge. Furthermore, Table B.2 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.

pads has ceased. It further allows us to analyze whether pads are an experience good that only need initial subsidies to foster adoption, or whether they are rather a luxurious good and need constant subsidies to maintain usage. The results are shown in Table 8. While, the coefficients of both of the two individual treatment arms are positive, none of them is statistically significant. However, workers that 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. This p-value also 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.[25] 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. Taken together, our short-term and long-term results imply that removing financial constraints is important as it allows women to experiment with sanitary pads.

5 Robustness Checks

5.1 Spillover effects

One concern for the estimation of treatment effects are potential spillover effects from treated to control workers, given that they work alongside each other in the same factory in our setting. We could expect such spillover effects to be stronger for control than treated workers, if, after having already received a direct effect from their treatment, treated workers have less scope to further improve on our outcome measures from spillover

[25] 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, as shown in Column 1 of Table 2.

effects than control workers. In that case, spillovers 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 collected information on social connections among all workers participating in Phase 2 using a novel incentivized method to collect network data in a setting where workers may have difficulties to provide enough information for us to identify connected workers in our worker rooster. In the baseline survey workers received a form in which they could note up to three workers, including their factory card (ID) number and phone number, who would receive a 10 BDT mobile phone top-up credit each. The form had to be submitted within one week in designated letter boxes in the factory and participation was incentivized by the same top-up phone credit for the worker submitting the voucher. Based on the network data, we create a dummy variable indicating whether a worker has any social ties to any treated worker. Thus, workers for whom this dummy takes the value zero are more "socially isolated" from other treated workers, and thus less susceptible to spillover effects. We find that 68 percent of workers have at least one connection to a treated worker, including 67 percent of control group workers.

We then test whether control workers that have social ties to treated workers are more likely to report using pads. As shown in Column 1 of Table B.3, we find that these workers are in fact 4 percentage points less likely to report using pads at endline, but this effect is not statistically significant. In Column 2, we test whether the type of treatment that socially connected workers received matters. We find some evidence that workers who only received information, and are connected to other workers who either received only information, or only pads, have a higher pad adoption rate than workers in the information treatment group without such connections. However, we do not see such an effect for workers in this group connected to others that received 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 spill-over 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 per 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.

Attrition status is not correlated with treatment assignment. As shown in the first row of Table B.4, 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.[26]

5.3 Desirability bias in survey responses

Our survey data based results may be affected by desirability bias among workers when being interviewed. For example, workers who received free pads may be compelled

[26]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, and thus were less likely to still be at the factory at follow-up. However, as mentioned above (and shown in Table B.4), 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).

to provide "desired" answers in the endline surveys, as they may think that certain behaviors are more expected from them. We address this concern by collecting the necessary information in the baseline surveys of Phase 2 to construct a desirability score following Crowne and Marlowe (1960) and Dhar et al. (2022).[27] We can then test whether estimated treatment effects based on survey responses are larger among workers with a higher desirability score, which would suggest that the effect estimates are at least partly driven by such bias. Table B.5 shows the results when replicating our core survey based results, but adding interactions of our three treatment indicators with an indicator for workers with above median desirability score within their factory. Column 1 shows that for pad use, the interaction effects of the two main treatment group indicators with the desirability score are negative though not significant, while the interaction effect of having both treatments barely changes for persons with a high score. This speaks against treated workers solely reporting higher pad use due to desirability bias.

We also do not see significant interactions with the desirability score for the knowledge, traditional practices, or UTI index (Columns 2 to 4). Meanwhile, for worker well-being (Column 5), for which we found no overall effects, we observe a marginally significant positive effect among workers in the *Info* treatment with a low desirability score. A reason for this pattern could be that high desirability bias could make reporting of individual well-being more noisy among workers. However, we note that this coefficient would not be significant after multiple hypotheses testing. Overall, though, we do not find evidence for our main reported results being driven by desirability bias.

[27]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.5.

5.4 Repeated Survey Effects

We remark that 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 a detailed 30-minutes long baseline survey on MHM practice on subsequent pad adoption, and some form of desirability bias in reporting pad use that is triggered by a second survey on MHM practice (the endline survey), after having already gone through the baseline survey (see Zwane et al. (2011); Dupas and Miguel (2017); Treurniet (2021) on discussions of the latter two effects).

To separate the first two from the latter two effects, in Phase 2, we randomly allocated 150 out of all the workers that the factory initially suggested to participate in the trial to remain outside the trial sample. They were not surveyed at baseline, but went through the same endline survey as the other workers. These workers were 11 percentage points less likely to report using pads at endline than workers from the control group from Phase 2 (55 vs. 66 percent).[28] Meanwhile, among control workers, those with higher values on the desirability score discussed above are 2.1 percent more likely to report using pads at baseline and 6.3 percent at endline. This suggests that, indeed, repeated surveying of workers could strengthen desirability bias in reporting pad usage, though the difference between the 6.3 and 2.1 percent is not significant.

[28]We had not created a random "outside group" in the sample from the first three factories (Phase 1). However, after the endline surveys with the workers in our experimental sample from these factories, we surveyed an additional 200 workers from these factories. As these workers were not randomly selected to this role, we use propensity score matching to match the control workers from the first three factories with these additionally surveyed workers from their factory. In this matched sample, self-reported pad use was 13 percentage points lower than in the control group from Phase 1 at endline survey (70 vs. 83 percent), similar to the 11 percent we found at Phase 2.

Finally, using again the network data from Phase 2 outlined above, we already showed that connected control workers are four percentage points less likely to report using pads at endline (Table B.3, Column 1). This suggests that the part of the increase in pad use among control workers that is not explained by (repeated) survey effects is unlikely to be driven by spillover effects.

To summarize, it seems that around 11 to 13 points of the 32 percentage point increase in reported pad usage among control workers from baseline to endline survey could be due to some mix of true behavior change triggered by the baseline survey and desirability bias induced from repeated surveying. Given that we do not find evidence for spillover effects from treated to control workers, at least not any mediated by social ties, the remaining increase may reflect time trends in pad adoption. MHM products such as the sanitary pads that we distributed did start to diffuse more rapidly in Bangladesh during the time of our trial, which may be behind such time trends.

6 Conclusion

We study how labor and health outcomes are affected by improved menstrual health management based on a randomized controlled trial conducted with around 1,900 female workers from four garment factories in Bangladesh. Workers were randomly assigned to either attend an information session on hygienic MHM, receive access to free sanitary pads for around half a year, or both. While relaxing financial constraints allows women to adopt modern, disposable sanitary pads for improved MHM, relaxing information constraints allows women to increase their knowledge and use traditional cloth hygienically. Both treatments appear to be strategic substitutes in improving self-reported health, reducing urinary tract infections to a similar extent.

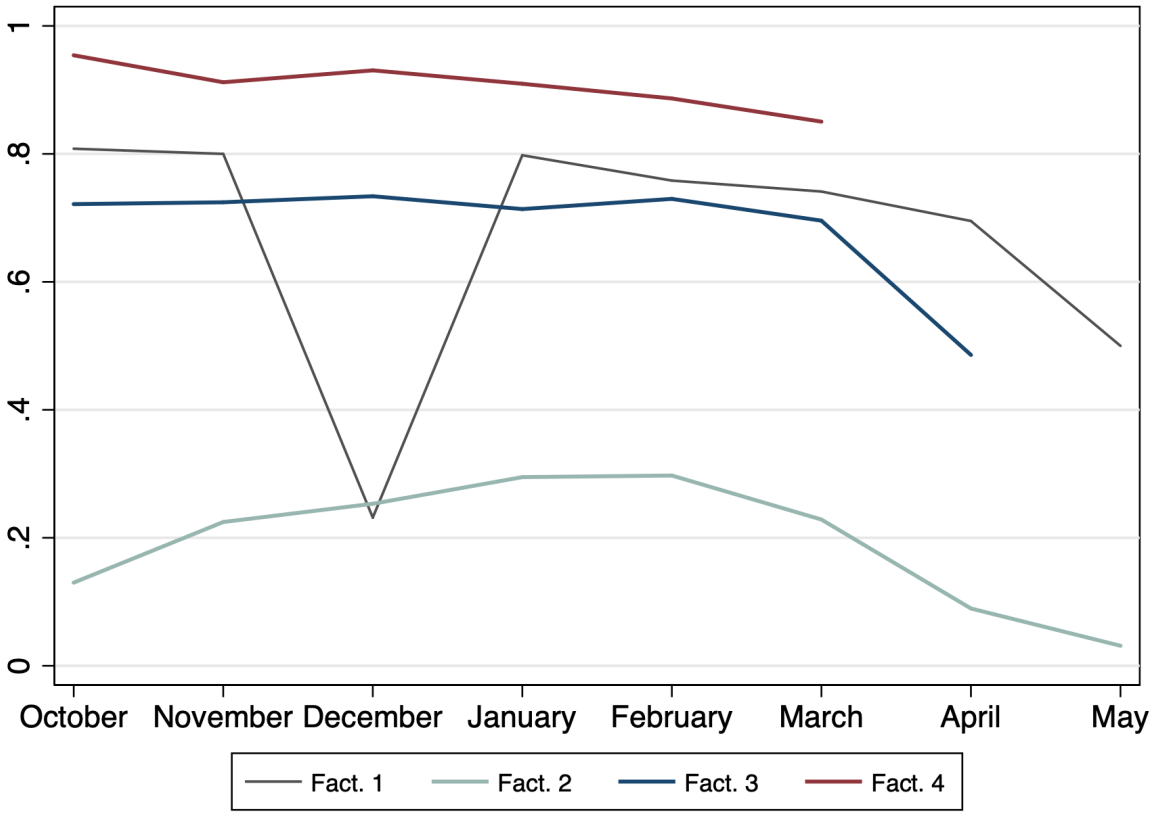
Our results suggest three main takeaways. First, information provision on hygienic use of traditional menstrual materials may be a cost-effective policy alternative to the promotion of modern products like disposable sanitary pads. It may be interesting in future research to study in which other health dimensions there is scope for improving traditional practices as an effective way to improve health outcomes. We caution here that our setting is such that women can actually manage reusable products hygienically: All women in our sample report that they have access to sanitary facilities, over 50 percent do not need to share a bathroom with someone outside of their household, and over 80 percent can wash their menstrual cloth in private without being seen by someone else. 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 common problem in many other 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, information provision by knowledgeable experts seems to be complementary to own experimentation, enabled through (temporary) free pad provision, in increasing pad use also after subsidizing their availability has stopped. Agarwal et al. (2022) find that the share of girls who pick up free pads in a long-term government program in Indian primary schools is similar to the share of girls who fall below the poverty line, indicating that continued subsidies for modern sanitary products are only needed for low-income households. Other health products, such as bed nets, have also been shown to be experience goods (Dupas, 2014). Our results highlight that long-term adoption is mostly sustainable when the benefits of improved MHM behavior are both self-experienced and communicated by local experts.

Third, a comprehensive MHM intervention like the one tested in this paper 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 school absenteeism, dropout, and performance (Agarwal et al., 2022; Benshaul-Tolonen et al., 2021). Two possible reasons for these different results come to mind. First, the consequences of absenteeism are immediate and severe - workers will not receive any pay on absent days. The observed levels of absenteeism, even though disruptive to the operations of garment factories, may therefore not be reduced further by interventions addressing MHM practices. There may, however, be scope to improve labor outcomes with well-tailored MHM interventions beyond improving MHM practices. Based on self-reported data from the Netherlands, Schoep et al. (2019) suggest that presenteeism - productivity loss while present at work or at school - is a bigger contributor to productivity losses due to menstruation than absenteeism. Second, behavioral factors such as habits (Hussam et al., 2022) or salience and convenience (Ahuja et al., 2010) may be of greater importance in our setting of working women who generally have been menstruating for several years, and may have gotten used to their preferred MHM practice, relative to school-aged girls who are just beginning to menstruate. That may explain why the positive effects we find on MHM practices are ultimately somewhat limited in size relative to those found in school settings, even though they are significant and economically meaningful, and improve health outcomes.

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. Eligible workers are 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.

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. 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*, *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 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 Pads, or only Info, 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*, *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 Pads, or only Info, 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*, *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 Pads, or only Info, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Urinary Tract Infections

	(1) UTI	(2) Days Lost	(3) Pain	(4) Odor	(5) Urinate	(6) Index
Pads	-0.055*	0.009	-0.010	-0.045	-0.035	-0.132**
	(0.029)	(0.027)	(0.041)	(0.033)	(0.036)	(0.064)
Info	-0.061**	0.010	-0.007	-0.034	-0.068*	-0.148**
	(0.028)	(0.028)	(0.042)	(0.034)	(0.035)	(0.063)
Pads × Info	0.070*	-0.006	-0.001	0.024	0.034	0.128
	(0.037)	(0.043)	(0.058)	(0.044)	(0.048)	(0.084)
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)	0.123	0.050	0.219	0.144	0.176	0.000
Pads&Info vs. Control	-0.047	0.012	-0.018	-0.055	-0.069	-0.153
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*, *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 Pads, or only Info, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Well-being at Work

	(1) Tired	(2) Target	(3) Energetic	(4) Shame	(5) Leak	(6) Odor	(7) Alone	(8) Irritated	(9) Absence menstr.pain	(10) Index
Pads	0.015	-0.067	0.003	-0.005	-0.046	0.044	0.049	0.020	-0.031	0.001
	(0.065)	(0.071)	(0.063)	(0.071)	(0.072)	(0.066)	(0.065)	(0.071)	(0.022)	(0.065)
Info	0.027	0.051	0.077	-0.004	0.064	0.077	0.014	0.015	0.001	0.041
	(0.065)	(0.070)	(0.062)	(0.071)	(0.073)	(0.066)	(0.068)	(0.073)	(0.021)	(0.067)
Pads × Info	-0.056	0.000	-0.140	-0.022	-0.040	-0.091	0.020	-0.012	0.029	0.030
	(0.090)	(0.098)	(0.088)	(0.099)	(0.101)	(0.092)	(0.091)	(0.100)	(0.030)	(0.093)
Observations	1,577	1,577	1,577	1,576	1,577	1,577	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)	1.925	2.276	2.265	2.195	2.310	2.332	2.873	2.008	0.900	0.000
Pads&Info vs. Control	-0.014	-0.015	-0.059	-0.031	-0.022	0.029	0.083	0.023	-0.002	0.073
Pads&Info vs. Ctr.: p-val.	0.827	0.836	0.365	0.658	0.765	0.658	0.212	0.747	0.941	0.317

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*, *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 Pads, or only Info, 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
	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
Nbr Workers	1,577	1,577	1,577
Worker FE	Yes	Yes	No
Factory-Month FE	Yes	Yes	No
Factory FE	No	No	Yes
Control (mean)	0.596	10264	
Pads&Info vs. Control	0.010	21.084	-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 18 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. Colums 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 Pads, or only Info, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Long-run Effects on Pad Use

	(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)	0.748	0.309	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*, *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 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 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 Pads, or only Info, but not both. Robust standard errors in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

References

Adhvaryu, A., J.-F. Gauthier, A. Nyshadham, and J. Tamayo (2021). Absenteeism, productivity, and relational contracting inside the firm. Mimeo, University of Michigan.

Adhvaryu, A., N. Kala, and A. Nyshadham (2022). Management and shocks to worker productivity. *Journal of Political Economy 130*(1), 1–47.

Agarwal, S., L. E. Chia, and P. Ghosh (2022). Do sanitary pads alleviate period poverty and improve girls' educational outcomes? *SSRN Electronic Journal*.

Ahmed, R. and K. Yesmin (2008). Menstrual hygiene: Breaking the silence. South Asia Sanitation and Hygiene practitioners' workshop papers.

Ahuja, A., M. Kremer, and A. P. Zwane (2010). Providing safe water: Evidence from randomized evaluations. *Annual Review of Resource Economics 2*(1), 237–256.

Alam, M.-U., S. P. Luby, A. K. Halder, K. Islam, A. Opel, A. K. Shoab, P. K. Ghosh, M. Rahman, T. Mahon, and L. Unicomb (2017). Menstrual hygiene management among Bangladeshi adolescent schoolgirls and risk factors affecting school absence: Results from a cross-sectional survey. *BMJ Open 2017*(7).

Anderson, M. (2008). Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects. *Journal of the American Statistical Association 103*(484), 1481–1495.

Arora, A., A. Mittal, D. Pathania, J. Singh, C. Mehta, and R. Bunger (2013). Impact of health education on knowledge and practices about menstruation among adolescent school girls of rural part of district Ambala, Haryana. *Indian Journal of Community Health 25*(4), 492–497.

Ashraf, N., J. Berry, and J. M. Shapiro (2010). Can higher prices stimulate product use? Evidence from a field experiment in Zambia. *American Economic Review 100*(5), 2383–2413.

Bai, L., B. Handel, E. Miguel, and G. Rao (2021). Self-control and demand for preventive health: Evidence from hypertension in India. *Review of Economics and Statistics 10*, 1–22.

Benjamini, Y., A. M. Krieger, and D. Yekutieli (2006). Adaptive linear step-up procedures that control the false discovery rate. *Biometrika 93*(3), 491–507.

Bennett, D., A. Naqvi, and W. Schmidt (2018). Learning, hygiene and traditional medicine. *Economic Journal 128*(612), 545–574.

Benshaul-Tolonen, A., S. Aguilar-Gomez, N. Heller Batzer, R. Cai, and E. C. Nyanza (2020). Period teasing, stigma and knowledge: A survey of adolescent boys and girls in Northern Tanzania. *PLoS One 15*(10), e0239914.

Benshaul-Tolonen, A., G. Zulaika, E. Nyothach, C. Odour, L. Mason, D. Obor, K. T. Alexander, K. F. Laserson, and A. Penelope (2021). Sanitary products, absenteeism and psychosocial well-being: Evidence from a three-arm cluster randomized controlled feasibility study in Western Kenya. CDEP-CGEG WP No . 96.

Biran, A., W. P. Schmidt, K. S. Varadharajan, D. Rajaraman, R. Kumar, K. Greenland, B. Gopalan, R. Aunger, and V. Curtis (2014). Effect of a behaviour-change intervention on handwashing with soap in India (SuperAmma): A cluster-randomised trial. *Lancet Global Health 2*(3), e145–e154.

Cohen, J. and P. Dupas (2010). Free distribution or cost-sharing? Evidence from a randomized malaria prevention experiment. *The Quarterly Journal of Economics 125*(1), 1–45.

Crichton, J., J. Okal, C. W. Kabiru, and E. M. Zulu (2013). Emotional and psychosocial aspects of menstrual poverty in resource-poor settings: A qualitative study of the experiences of adolescent girls in an informal settlement in Nairobi. *Health Care for Women International 34*(10), 891–916.

Crowne, D. and D. Marlowe (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology 24*(4), 349–354.

Das, P., K. K. Baker, A. Dutta, T. Swain, S. Sahoo, B. S. Das, B. Panda, A. Nayak, M. Bara, B. Bilung, P. R. Mishra, P. Panigrahi, S. Cairncross, and B. Torondel (2015). Menstrual hygiene practices, wash access and the risk of urogenital infection in women from Odisha, India. *PLoS One 10*(6).

Dhar, D., T. Jain, and S. Jayachandran (2022). Reshaping adolescents' gender attitudes: Evidence from a school-based experiment in India. *American Economic Review 112*(3), 899–927.

Dillon, A., J. Friedman, and P. Serneels (2021). Health information, treatment, and worker productivity. *Journal of the European Economic Association 19*(2), 1077–1115.

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature 50*(4), 1051–1079.

Dupas, P. (2011a). Do teenagers respond to HIV risk information? Evidence from a field experiment in Kenya. *American Economic Journal: Applied Economics 3*(1), 1–34.

Dupas, P. (2011b). Health behavior in developing countries. *Annual Review of Economics 3*(1), 425–449.

Dupas, P. (2014). Short-run subsidies and long-run adoption of new health products: Evidence from a field experiment. *Econometrica 82*(1), 197–228.

Dupas, P. and E. Miguel (2017). Impacts and determinants of health levels in low-income countries. In *Handbook of Field Experiments*, Volume 2, pp. 3–93. Elsevier Ltd.

El-Gilany, A.-H., K. Badawi, and S. El-Fedawy (2005). Menstrual hygiene among adolescent schoolgirls in Mansoura, Egypt. *Reproductive Health Matters 13*(26), 147–152.

Farole, T., Y. Cho, L. Bossavie, and R. Aterido (2017). Bangladesh Jobs Diagnostic. Jobs Series. World Bank, Washington.

Fink, G. and F. Masiye (2015). Health and agricultural productivity: Evidence from Zambia. *Journal of Health Economics 42*, 151–164.

Friebel, G., M. Heinz, and N. Zubanov (2021). Middle managers, personnel turnover, and performance: A long-term field experiment in a retail chain. *Management Science 68*(1), 211–229.

Galiani, S., P. Gertler, N. Ajzenman, and A. Orsola-Vidal (2016). Promoting handwashing behavior: The effects of large-scale community and school-level interventions. *Health Economics 25*(12), 1545–1559.

Garikipati, S. and C. Boudot (2017). To pad or not to pad: Towards better sanitary care for women in Indian slums. *Journal of International Development 29*, 32–51.

Getahun, T. D. and E. Villanger (2018). Labour-intensive jobs for women and development: Intra-household welfare effects and its transmission channels. *Journal of Development Studies 54*(7), 1232–1252.

Ghanem, D., S. Hirshleifer, and K. Ortiz-Becerra (2021). Testing attrition bias in field experiments. Center for Effective Global Action (CEGA) Working Paper No. 113.

Girod, C., A. Ellis, K. L. Andes, M. C. Freeman, and B. A. Caruso (2017). Physical, social, and political inequities constraining girls' menstrual management at schools in informal settlements of Nairobi, Kenya. *Journal of Urban Health 94*(6), 835–846.

Guiteras, R., J. Levinsohn, and A. M. Mobarak (2015). Encouraging sanitation investment in the developing world: A cluster-randomized trial. *Science 348*(6237), 903–906.

Haggerty, P. A., K. Muladi, B. R. Kirkwood, A. Asworth, and M. Manunebo (1994). Community-based hygiene education to reduce diarrhoeal disease in rural Zaire: Impact of the intervention on diarrhoeal morbidity. *International Journal of Epidemiology 23*(5), 1050–1059.

Heath, R. (2018). Why do firms hire using referrals? evidence from Bangladeshi garment factories. *Journal of Political Economy 126*(4), 1691–1746.

Heath, R. and M. Mobarak (2015). Manufacturing growth and the lives of Bangladeshi women. *Journal of Development Economics 115*, 1–15.

Herrmann, M. A. and J. E. Rockoff (2012). Does menstruation explain gender gaps in work absenteeism? *Journal of Human Resources 47*(2), 493–508.

Herrmann, M. A. and J. E. Rockoff (2013). Do menstrual problems explain gender gaps in absenteeism and earnings? Evidence from the National Health Interview Survey. *Labor Economics 24*(2), 12–22.

Hulland, K. R., R. P. Chase, B. A. Caruso, R. Swain, B. Biswal, K. C. Sahoo, P. Panigrahi, and R. Dreibelbis (2015). Sanitation, stress, and life stage: A systematic data collection study among women in Odisha. *PLoS One 10*(11).

Hussam, R., A. Rabbani, G. Reggiani, and N. Rigol (2022). Rational habit formation: Experimental evidence from handwashing in India. *American Economic Journal: Applied Economics 14*(1), 1–41.

ICDDR (2014). Bangladesh National Hygiene Baseline Survey. Technical report, International Centre for Diarrheal Diseases Research.

Ichino, A. and E. Moretti (2009). Biological gender differences, absenteeism, and the earnings gap. *American Economic Journal: Applied Economics 1*(1), 183–218.

ILO (2014). Wages and working hours in the textiles, clothing, leather and footwear industries. www.ilo.org.

ILO (2016). Wages and productivity in garment sector in Asia and the Pacific and the Arab States. www.ilo.org.

Impactt (2011). Finding the sweet spot: Smarter ethical trade that delivers more for all. https://impacttlimited.com.

Impactt (2012). Nice work? Are workers taking the strain in the economic downturn? 2006-2012. https://impacttlimited.com.

Impactt (2013). Nicer work? Impactt's benefits for business and workers programme 2011-2013. https://impacttlimited.com.

Jalan, J. and E. Somanathan (2008). The importance of being informed: Experimental evidence on demand for environmental quality. *Journal of Development Economics 87*(1), 14–28.

Kaur, R., K. Kaur, and R. Kaur (2018). Menstrual hygiene, management, and waste disposal: Practices and challenges faced by girls/women of developing countries. *Journal of Environmental and Public Health 2018*.

Khanna, M. (2021). The precocious period: The impact of early menarche on schooling in India. *SSRN Electronic Journal*.

Klasen, S. (2018). The impact of gender inequality on economic performance in developing countries. *Annual Review of Resource Economics 10*, 279–298.

Kremer, M. and E. Miguel (2007). The illusion of sustainability. *Quarterly Journal of Economics 122*(3), 1007–1065.

Krenz, A. and H. Strulik (2021). The impact of menstruation hygiene management on work absenteeism of women in Burkina Faso. *Economics and Human Biology 43*, 101067.

Kumar, A. and K. Srivastava (2011). Cultural and social practices regarding menstruation among adolescent girls. *Social Work in Public Health 26*(6), 594–604.

Lee, D. S. (2009). Training, wages, and sample selection: Estimating sharp bounds on treatment effects. *Review of Economic Studies 76*(3), 1071–1102.

Loughnan, L. C., R. Bain, R. Rop, M. Sommer, and T. Slaymaker (2016). What can existing data on water and sanitation tell us about menstrual hygiene management? *Waterlines 35*(3), 228–244.

Macchiavello, R., A. Menzel, A. Rabbani, and C. M. Woodruff (2020). Challenges of change: An experiment training women to manage in the Bangladeshi garment sector. Working Paper, CERGE-EI Prague.

Madajewicz, M., A. Pfaff, A. van Geen, J. Graziano, I. Hussein, a. R. S. Hasina Momotaj, and H. Ahsan (2007). Can information alone change behavior? Response to arsenic contamination of groundwater in Bangladesh. *Journal of Development Economics 84*(2), 731 – 754.

McKinsey (2011). Bangladesh's ready made garments landscape: The challenge of growth. McKinsey&Company, Apparel, Fashion & Luxury Practice.

McMahon, S. A., P. J. Winch, B. A. Caruso, E. A. Ogutu, I. A. Ochari, and R. D. Rheingans (2011). 'The girl with her period is the one to hang her head' Reflections on menstrual management among schoolgirls in rural Kenya. *BMC International Health and Human Rights 11*(1), 1–10.

Menzel, A. and C. Woodruff (2021). Gender wage gaps and worker mobility: Evidence from the garment sector in Bangladesh. *Labour Economics 71*, 102000.

Mohamed, Y., K. Durrant, C. Huggett, J. Davis, A. Macintyre, S. Menu, J. N. Wilson, M. Ramosaea, M. Sami, D. J. Barrington, D. McSkimming, and L. Natoli (2018). A qualitative exploration of menstruation-related restrictive practices in Fiji, Solomon Islands and Papua New Guinea. *PLoS ONE 13*(12), e0208224.

Montgomery, P., J. Hennegan, C. Dolan, M. Wu, L. Steinfield, and L. Scott (2016). Menstruation and the cycle of poverty: A cluster quasi-randomised control trial of sanitary pad and puberty education provision in Uganda. *PLoS One 11*(12).

Montgomery, P., C. R. Ryus, C. S. Dolan, S. Dopson, and L. Scott (2012). Sanitary pad interventions for girls' education in Ghana: A pilot study. *PLoS One 7*(10).

Nemade, D., S. Anjenaya, and R. Gujar (2009). Impact of health education on knowledge and practices about menstruation among adolescent school girls of Kalamboli, Navi-Mumbai. *Health and Population Perspectives and Issues* (32), 167–175.

Oster, E. and R. Thornton (2011). Menstruation, sanitary products and school attendance: Evidence from a randomized evaluation. *American Economic Journal: Applied Economics 3*(1), 91–100.

Patil, S. R., B. F. Arnold, A. L. Salvatore, B. Briceno, S. Ganguly, J. M. Colford, and P. J. Gertler (2014). The effect of India's total sanitation campaign on defecation behaviors and child health in rural Madhya Pradesh: A cluster randomized controlled trial. *PLoS Medicine 11*(8), e1001709.

Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology 38*(1), 119–125.

Robert, J. and K. L. Shaw (2022). Managers and the management of organizations. NBER Working Paper 30730.

Schoep, M. E., E. M. Adang, J. W. Maas, B. De Bie, J. W. Aarts, and T. E. Nieboer (2019). Productivity loss due to menstruation-related symptoms: A nationwide cross-sectional survey among 32 748 women. *BMJ Open 9*(6), e026186.

SNV (2014). Findings of the value chain analysis, 2014, Final Report. SNV Netherlands Development Organisation, 2015, Dhaka, Bangladesh.

SNV (2016). Baseline study of target RMG factories and their workers, 2016, Final Report. SNV Netherlands Development Organisation, 2016, Dhaka, Bangladesh.

Sumpter, C. and B. Torondel (2013). A systematic review of health and social effects of menstrual hygiene management. *PLoS One 8*(4).

Torondel, B., S. Sinha, J. R. Mohanty, T. Swain, P. Sahoo, B. Panda, A. Nayak, M. Bara, B. Bilung, O. Cumming, P. Panigrahi, and P. Das (2018). Association between unhygienic menstrual management practices and prevalence of lower reproductive tract infections: A hospital-based cross-sectional study in Odisha, India. *BMC Infectious Diseases 18*(1), 1–12.

Treurniet, M. (2021). The impact of being surveyed on the adoption of agricultural technology. *Economic Development and Cultural Change*, *forthcoming*.

van Eijk, A. M., M. Sivakami, M. B. Thakkar, A. Bauman, K. F. Laserson, S. Coates, and P. A. Phillips-Howard (2016). Menstrual hygiene management among adolescent girls in India: A systematic review and meta-analysis. *BMJ Open 2016*(6), e010290.

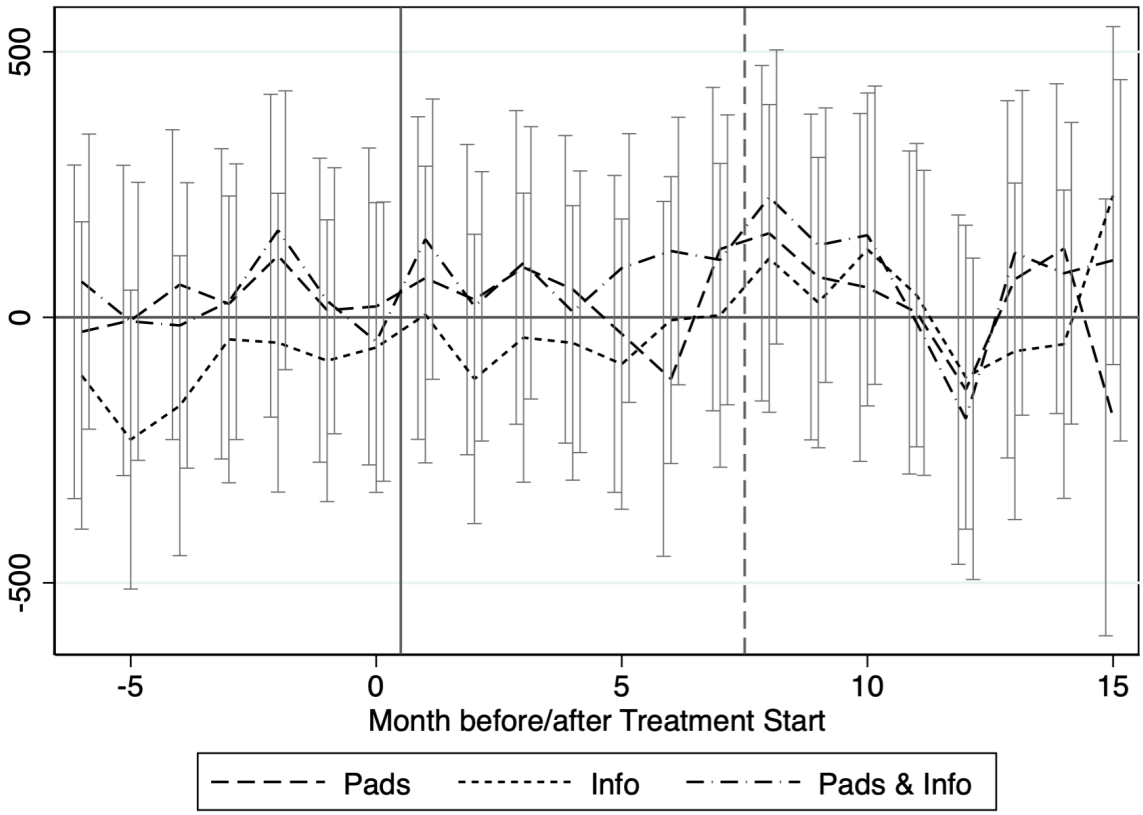
World Bank (2018). World Development Indicators.

WSSCC (2013). Celebrating womanhood. How better menstrual hygiene management is the path to better health, dignity and business. Technical report, Water Supply Sanitation Collaborative Council.

Zwane, A. P., J. Zinman, E. V. Dusen, W. Pariente, C. Null, E. Miguel, M. Kremer, D. Karlan, R. Hornbeck, X. Gine, E. Duflo, F. Devoto, B. Crepon, and A. Banerjee (2011). "Being surveyed can change later behavior and related parameter estimates". *Proceedins of the National Academy of Sciences of the United States of America 108*(5), 1821–1826.

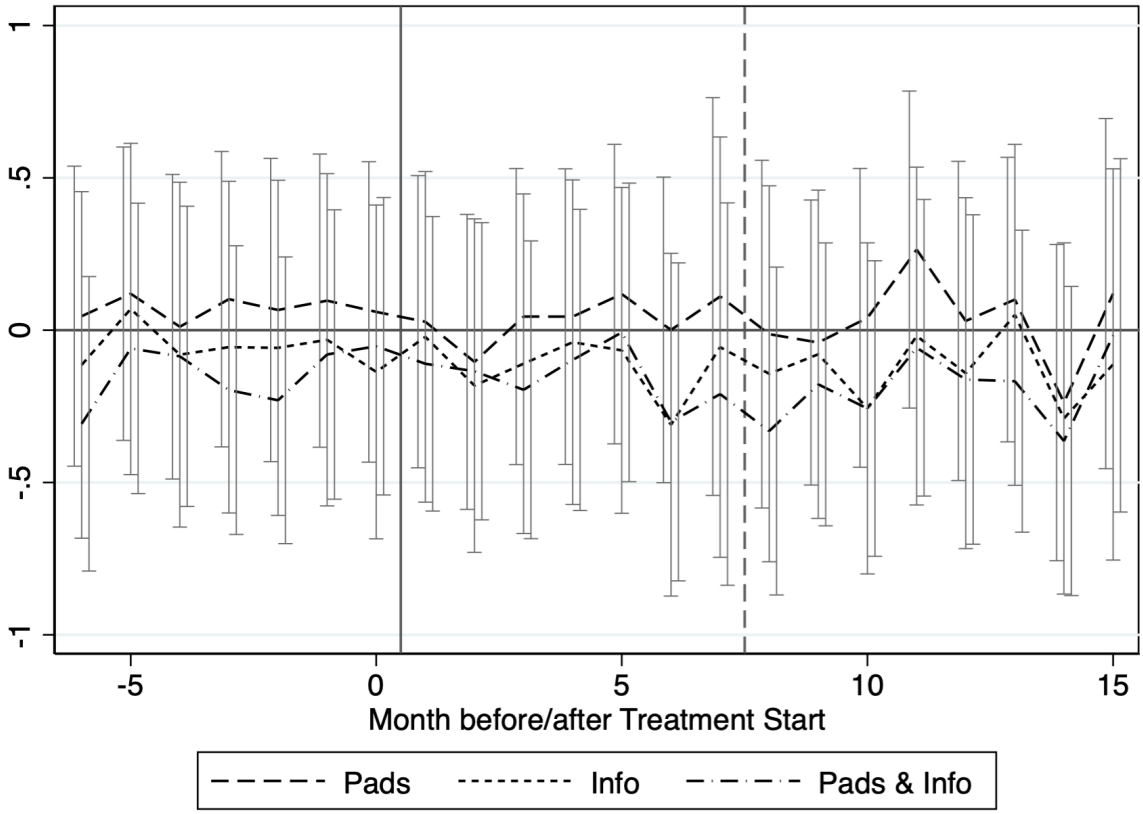
Appendix A: Time trends for worker absenteeism and earning by treatment group

Figure A.1: 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.

Figure A.2: 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.

Appendix B: Further Results and Robustness Checks

Table B.1: Multiple Hypotheses Testing Adjustments

		(1)	(2)	
Outcome	Treatment	P-val	FDR	
Pad Use	Pads	0.000	0.001	***
Pad Use	Info	0.465	0.586	
Pad Use	Pads&Info vs. Ctr.	0.000	0.001	***
MHM Knowledge	Pads	0.748	0.908	
MHM Knowledge	Info	0.002	0.013	**
MHM Knowledge	Pads&Info vs. Ctr.	0.024	0.068	*
MHM Practice	Pads	0.156	0.263	
MHM Practice	Info	0.000	0.001	***
MHM Practice	Pads&Info vs. Ctr.	0.032	0.079	*
UTI	Pads	0.039	0.086	*
UTI	Info	0.018	0.064	*
UTI	Pads&Info vs. Ctr.	0.014	0.054	*
Wellbeing	Pads	0.982	1.000	
Wellbeing	Info	0.536	0.672	
Wellbeing	Pads&Info vs. Ctr.	0.317	0.510	
Absent	Pads	0.467	0.586	
Absent	Info	0.316	0.510	
Absent	Pads&Info vs. Ctr.	0.856	0.921	
Pay	Pads	0.856	0.921	
Pay	Info	0.068	0.122	
Pay	Pads&Info vs. Ctr.	0.707	0.892	
Exit	Pads	0.958	1.000	
Exit	Info	0.351	0.523	
Exit	Pads&Info vs. Ctr.	0.853	0.921	
Pad Use Long-Run	Pads	0.204	0.337	
Pad Use Long-Run	Info	0.365	0.523	
Pad Use Long-Run	Pads&Info vs. Ctr.	0.004	0.018	**

Notes: Table shows the original p-values of 27 coefficients (Column 1), and the equivalent p-values after adjustment for multiple hypotheses testing (MHT) within the set of these 27 p-values (Column 2). The adjusted p-values are sharpened FDR q-values (Benjamini et al., 2006). 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* treatments, and the *Pads&Info vs. Control* p-value shown at the bottom of all results tables: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2: Robustness Check - Characteristics of Workers in Long-Run Survey

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

Table B.3: 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 data needed to construct score 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. Standard errors clustered at worker-level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.4: 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.5: Robustness Check - Social Desirability Bias

	(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	0.108
	(0.050)	(0.032)	(0.025)	(0.118)	(0.105)
Pads × High Desir. Score	-0.092	0.046	-0.016	0.043	-0.018
	(0.083)	(0.048)	(0.041)	(0.192)	(0.169)
Info	-0.007	0.054*	0.081***	-0.122	0.194*
	(0.058)	(0.031)	(0.027)	(0.117)	(0.099)
Info × High Desir. Score	-0.037	0.058	0.022	-0.032	-0.115
	(0.097)	(0.057)	(0.050)	(0.185)	(0.170)
Pads × Info	0.051	-0.053	-0.088**	0.043	-0.264*
	(0.068)	(0.044)	(0.038)	(0.156)	(0.141)
Pads × Info × High Desir. Score	-0.002	-0.021	0.008	0.059	0.204
	(0.116)	(0.077)	(0.067)	(0.252)	(0.225)
High Desirability Score	0.063	-0.010	0.041	0.030	0.105
	(0.065)	(0.031)	(0.026)	(0.146)	(0.133)
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	0.038
Pads&Info vs. Ctr.: p-val.	0.000	0.763	0.229	0.068	0.717
Pads&Info vs. Ctr. × Des.High	-0.131	0.083	0.014	0.071	0.071
Pads&Info vs. Ctr. × Des.H.: p-val.	0.091	0.085	0.733	0.705	0.672

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 social desirability bias equal 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 Pads, or only Info, 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,[29] 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.5), and data on

[29]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.3). 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.1 and A.2. 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.1 and A.2.

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 6-8, the variables is absorbed by the worker fixed effects. Robust standard errors in brackets. 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