Period Talk on the Factory Floor: *Evidence from a Workplace Menstrual Awareness Campaign Involving Men*

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Abstract

Menstruation is a common biological process that affects women at work, yet in many LMICs it is expected to be managed in private and is rarely considered when organizations address workers' needs. This paper studies a large-scale menstrual awareness campaign in a Bangladeshi garment factory, where short audio messages about menstruation were broadcast daily over factory loudspeakers and heard by both women and men. Using before–after survey data from a panel of workers, we show that men are already heavily involved in menstrual management prior to the campaign, with many reporting that they buy pads for their wives because they feel ashamed purchasing commercial absorbents themselves. Following the campaign, menstrual stigma and taboos decline for both women and men, and restrictive social norms become more permissive for behaviors related to cross-gender communication and purchasing menstrual products, while norms limiting the washing and drying of reusable absorbents remain more resistant to change. These findings suggest that low-cost, mixed-gender workplace campaigns can shift the social environment surrounding menstruation at scale, pointing to a feasible organizational strategy to reduce hidden, norm-driven barriers to women's well-being and labor participation in low- and middle-income countries

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1 Introduction

Workplaces worldwide are becoming more gender equal. Gains are visible in high- and in low- and middle-income countries. For example, in Bangladesh, over the past 35 years, women's share of the workforce has increased from 24% to 44% . Yet, many workplaces have been designed by men and for men, and have social and physical structures that disadvantage women (Cullen & Perez-Truglia, 2023a; Sommer et al., 2016; He et al., 2021).

A key dimension that workplaces frequently overlook is women's biological cycles. For 3 to 7 days each month over most of their adult lives, women experience menstruation, which requires access to changing and washing facilities to replace absorbents, and flexibility to take breaks or manage pain with medication. As men do not have such biologically needs, and menstruation is a topic traditionally not discussed with them, organizational routines and work schedules often do not accommodate for these needs. Even sectors with an overwhelmingly female workforce, such as Bangladesh's garment industry, are characterized by rigid schedules, long shifts, and limited investment in wash facilities.

In addition to workplaces not having been designed by women in the past, in low and middle income countries menstruation remains a taboo topic in the present (Castro & Czura, 2025), so women may not voice their needs. If they need a break to change products or a dustbin to dispose of them, they might feel ashamed to ask—especially if doing so requires speaking with a male supervisor (Castro & Mang, 2024). The inability to manage menstruation with comfort can undermine individual dignity and well-being, and can also affect economic outcomes by contributing to presenteeism or absenteeism (Czura et al., 2024; Torondel et al., 2018). In this sense, menstrual management at work is a development issue: it interacts with female labor force participation, productivity, and women's well-being, yet remains largely invisible to employers and policymakers.

Recent work has begun to document a causal link between menstrual stigma and menstrual health management, and between menstrual health management and economic and health outcomes. Conceptually, the mechanism is straightforward. Menstruation is biologically common, yet stigma and taboos require women to keep the fact that they are menstruating hidden in public spaces such as schools and workplaces. This expectation of concealment has direct implications for menstrual health management. For example, many women rely on improvised or repurposed fabrics as menstrual absorbents, even though commercial products such as sanitary pads are widely available in pharmacies and convenience stores. Purchasing these products, however, often requires asking for a taboo-related item in public settings and interacting with male vendors, who dominate retail sales in this context. As a result of stigma and anticipated embarrassment, a large share of women choose not to adopt these products and continue to rely on menstrual cloth (Castro & Mang, 2024). Limited access to preferred menstrual products can in turn negatively affect comfort, health, and

labor outcomes (Torondel et al., 2018; Czura et al., 2024). In this view, menstruation-related constraints do not arise solely from biology or infrastructure; they are partly mediated by social rules governing visibility, speech, and interaction in shared spaces. A central question is therefore whether organizations can intervene upstream in this causal chain—by shifting stigma and social norms around menstruation—rather than focusing only on downstream outcomes.

This paper examines a workplace menstrual health campaign aimed at making it easier for women to manage their periods at work and at bringing the topic into the open. The campaign took place in a garment factory in Bangladesh employing more than 4,000 workers. In partnership with factory management, an NGO implemented an organization-wide awareness campaign and made period-specific menstrual products available to all menstruating women. The awareness component consisted of short audio skits broadcast daily over factory loudspeakers and interspersed with the factory's usual music playlist. These messages were designed to be informational and to model open conversations about menstruation through everyday interactions, such as those between mothers and daughters, husbands and wives, or female coworkers. In parallel, women were eligible to receive a new menstrual product intended to better accommodate the demands of factory work. In this context, women typically rely either on old cloth from unused garments or on disposable pads. Cloth is often insufficiently absorbent and requires frequent changing, while disposable pads require appropriate disposal facilities. To address these constraints, the NGO distributed highly absorbent reusable menstrual underwear made of easy-to-clean antibacterial fabric.

Using individual-level panel survey data collected by the NGO before and after the campaign from a random subsample of 250 workers in a factory of approximately 4,000 employees, this study documents changes in attitudes and practices associated with exposure to the intervention in a simple pre–post framework. The analysis should therefore be interpreted as describing associations consistent with campaign exposure in a contained workplace environment, rather than as estimating causal effects. Within this framework, we document three main patterns. First, men are already heavily involved in menstrual management and display high openness to engagement: around half report having purchased pads for their wives or female relatives, most commonly because women feel ashamed to buy pads themselves, and at baseline men report more curiosity and excitement—and less embarrassment—about the campaign than women. Second, stigma and taboos surrounding menstruation decline for both women and men over the campaign period. Third, perceived social norms become more permissive, particularly for behaviors directly modeled by the campaign, such as cross-gender communication about menstruation within families and purchasing menstrual products from male shopkeepers, while norms regulating visible practices such as washing and drying reusable absorbents in communal spaces remain more resistant to change.

This paper is, to our knowledge, the first to document how a large-scale, mixed-gender

workplace campaign on menstruation operates inside a large organization in a low-income setting, and to examine men's role in that environment alongside women. While previous work has shown that small-group discussions among women can reduce menstrual stigma and increase adoption of improved absorbents, these interventions are difficult to scale to factories employing thousands of workers (Castro & Mang, 2024). By contrast, the campaign studied here uses existing factory communication systems to reach the entire workforce, including men, in a cost-effective and operationally feasible way. The analysis is descriptive, but it provides insight into the "menstrual environment" that women navigate at work—capturing stigma, taboos, perceived social norms, and men's own attitudes and behaviors—and offers an empirical foundation for future research on organizational and policy responses to menstrual health social constraints. In this sense, the paper lays groundwork for a broader research and policy agenda on what employers, governments, and development practitioners can do to make workplaces more compatible with women's biological realities, and to address hidden, norm-driven barriers to women's full economic participation.

This paper contributes to the emerging literature on menstruation and development, as well as to research on gender and workplaces in low- and middle-income countries. First, it adds to the growing evidence on menstrual health management. Existing work has documented links between menstrual absorbents, health, and labor outcomes, and has begun to show how stigma, information, and access to products shape women's well-being (Hennegan et al., 2020; Torondel et al., 2018; Czura et al., 2024; Castro & Mang, 2024; Castro & Czura, 2025). We extend this literature by studying a scalable, organization-wide workplace intervention, documenting changes in stigma, taboos, and social norms among both women and men, and showing how effect sizes previously observed in more intensive randomized interventions fare at scale. Second, the paper contributes to research on gender and workplaces in low- and middle-income countries (Kabeer, 2017; Cullen & Perez-Truglia, 2023b; McKelway, 2022). This literature highlights workplaces as central sites where gender norms, power hierarchies, and constraints on women's agency are produced and contested. We add to this work by treating menstruation—a biological process—as a workplace gender barrier, examining a workplace-based strategy that explicitly includes men both as gatekeepers in menstrual product acquisition and as a key reference group for social norms, and by documenting how existing workplace communication infrastructures can be leveraged to reach thousands of workers simultaneously.

The remainder of the paper is structured as follows. Section 2 develops the conceptual framework describes the institutional context, the workplace setting, and the menstrual awareness campaign. It also outlines the data, measurement of key outcomes, and empirical approach. Section 4 presents the main results and Section 5 concludes.

2 Background and Conceptual Framework

Menstruation affects roughly half of the world's population, yet it remains an understudied topic in economics and development. This knowledge gap is important because menstruation can have very direct implications for women's labor force participation and well-being, that remain undetected. A key feature of menstruation is that, despite being a natural biological process, it is often concealed and rarely discussed. This creates a paradox: menstruation is biologically common yet socially private, affecting workers while remaining largely unacknowledged by employers. We refer to this tension as the "privately public" constraint. Women experience menstruation in public spaces—workplaces, schools, and communities—yet social norms enforce concealment and silence. As a result, organizations remain unaware of the barriers women face, and women are often unable to voice their needs without shame or social cost.

Recent causal evidence is beginning to unpack the mechanisms linking menstruation to economic and health outcomes in the workplace. Czura et al. (2024) is the first study to causally examine how menstrual health management affects labor supply and productivity among garment workers in Bangladesh. Castro & Mang (2024) moves upstream in this chain, showing that menstrual stigma and restrictive social norms shape how women manage menstruation in the workplace, specifically whether stigma affects access and adoption to commercial menstrual absorbents. Taken together, this emerging evidence suggests a cascade of effects: stigma and social norms influence menstrual health management, which then can affect women's health, comfort, and ability to participate in the labor force. In this view, menstruation-related labor constraints do not arise solely from biology or product access, but there is an indirect role of social rules that govern visibility, communication, and acceptable behavior in shared spaces.

If this causal chain holds, then a natural policy question emerges: Can workplaces intervene at the top of the cascade—by shifting stigma and social norms surrounding menstruation? The answer is not obvious. Social norms around menstruation are deeply rooted, extend beyond the workplace, and are often treated as private or cultural rather than organizational concerns. At the same time, large workplaces such as garment factories may be uniquely positioned to affect such norms: they bring together large numbers of men and women in shared spaces and have a direct stake in the well-being and productivity of a predominantly female workforce.

We examine this question by analyzing a workplace communication campaign designed to normalize menstruation as a legitimate topic in shared spaces. The underlying premise is that breaking workplace silence around menstruation may reduce stigma and shame and restrictive social norms on the topic, which in turn could facilitate better menstrual management and reduce menstruation-related work disruptions. Figure 1 illustrates where this

paper contributes evidence within the broader causal chain.

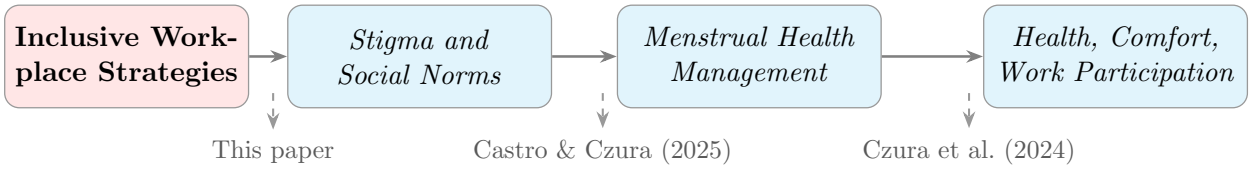


Figure 1: Conceptual pathway

We will focus on three related dimensions: taboos, stigma and social norms. A *taboo* is a shared belief that menstruation should not be openly discussed. *Stigma* is the negative beliefs and shame associated with menstruation and menstruating bodies. *Social norms* reflect perceptions of what others in one's environment consider socially acceptable, such as whether it is appropriate to talk about menstruation across gender lines, to purchase menstrual products from male shopkeepers, or to wash and dry reusable materials in visible or communal spaces.

Social norms around menstruation might persist in part because the topic is rarely discussed in public, creating uncertainty about what others think is appropriate. In such environments, silence itself sustains restrictive beliefs, even when individual attitudes may be less conservative. Public and repeated messaging in a shared workplace can break this equilibrium by making menstruation visible as a legitimate topic of conversation and by signaling that others are being exposed to the same message. When workers hear the same content broadcast openly, they update their beliefs not only about menstruation itself but also about what is discussable in front of others. In this sense, the campaign can be understood as providing "permission to speak," reducing the perceived social cost of engaging with the topic and weakening norms that rely on mutual silence.

Men are a strategic group to include because they constitute roughly half of the workforce and therefore play a central role in shaping what is perceived as socially acceptable within the workplace. Perceived norms are inherently relational, and women's beliefs about acceptability depend in part on how they think men will react. Beyond the factory floor, men are also directly involved in menstrual management through market interactions, such as purchasing products, and through household relationships as spouses and parents. Including men in workplace messaging therefore targets a key reference group that influences both public interactions at work and private decisions at home.

This framework yields three empirical expectations or hypothesis. First, stigma and taboos surrounding menstruation should decline for both women and men following the campaign. Second, perceived social norms should shift most strongly in domains directly modeled by the campaign, particularly norms regulating communication about menstruation. Third, norms governing hygiene, especially those related to washing and drying reusable materials in public or communal spaces, are expected to change also albeit less, as these

norms are more closely tied to concerns about privacy, dignity, and bodily exposure that may not be fully addressed through communication alone.

3 Context, Intervention and Empirical Approach

3.1 Setting and Intervention

The study took place in a garment factory on the outskirts of Dhaka, Bangladesh. The factory employs 4,000 workers, consisting of which 50% are female workers. The workers' primary tasks encompass different stages of the manufacturing process, such as cutting, sewing, assembling, and finishing garments. The factory environment is structured and shared: workers spend many hours per day in common production halls, are exposed to the same announcements and music through a central loudspeaker system, and interact repeatedly with the same peers and supervisors. These features make the workplace a natural setting for public, repeated messaging and for the diffusion of shared beliefs.

The intervention consisted of an organization-wide menstrual health awareness campaign designed to normalize menstruation as a legitimate topic of health and everyday life. The campaign was designed with the idea of scalability in mind aiming to not disrupting production. Rather than targeting women only as most information campaigns do in the topic of menstrual heath, it was explicitly mixed-gender and publicly visible to all workers. It consisted of audio-based messaging broadcast over the factory loudspeaker system, complemented by informational posters in bathrooms and access to menstrual products for female workers through the factory store.

The audio content included one informational jingle and three short skits, all produced in by local Bengali agencies and tailored to the context. The informational jingle, set to Bengali folk-style music, conveyed basic facts about menstruation, emphasized that it is a normal biological process, challenged beliefs that menstrual blood is dirty or shameful, highlighted the importance of hygiene, and mentioned warning signs such as recurring infections. The three skits modeled conversations about menstruation in everyday settings: one between a husband and wife, one between a mother and daughter, and one between two female coworkers. Together, they covered menstruation onset, product use, hygiene practices, and how men can support women during menstruation.

The campaign was delivered through the factory loudspeaker once per day for approximately two and a half months, interspersed with the regular music playlist. Each exposure lasted only a few minutes, but it was repeated frequently to ensured sustained visibility. Two posters were also displayed in factory bathrooms: one providing basic information about menstruation and common symptoms, and another explaining how to use and care for the menstrual products available at the factory, including washing and drying practices

for reusable products.

The intervention was designed to target perceived social norms rather than private beliefs alone. First, the audio skits explicitly modeled communication across relationships that were highly taboo at baseline, including conversations between husbands and wives and between parents and sons. Second, the campaign was public and collective: all workers heard the same messages, and everyone knew that others were hearing them as well. This publicness is central to norm change, as it allows individuals to update their beliefs about what others consider acceptable, if the firm leadership is publicly promoting this campaign, it must be because talking about menstruation is acceptable. Finally, the workplace context ensured repeated exposure in a shared environment where peer visibility is high. For these reasons, the campaign was expected to have its strongest effects on norms regulating communication and cross-gender interactions, while norms tied to the public visibility of menstrual practices, such as washing and drying reusable materials, were expected to be more resistant to change.

Lastly, a new menstrual absorbent—a reusable menstrual underwear accompanied by a washing and drying bag—was made available to all menstruating workers. Women in this setting already have access to disposable pads, but this underwear is an additional commercial product developed by the NGO and introduced through the factory; women could collect it from the factory store if they wished to use it. All women were eligible to pick up this product, so in this study the effect of the loudspeaker announcements cannot be disentangled from the effect of trying a new menstrual product for the female respondents.

3.2 Data and Empirical Approach

This paper uses secondary survey data collected in collaboration with the factory and its menstrual health implementation partner. The data come from a random sample of 250 workers selected from the full factory list of employees that held no supervisory role. It consisted on 122 women and 128 men. Respondents were interviewed at baseline in August of 2023 prior to the launch of the awareness campaign and re-interviewed in February 2024 at endline after the campaign concluded, yielding a panel at the individual level. All surveys were administered in person by trained female enumerators, and respondents were assured confidentiality to reduce social desirability concerns when answering sensitive questions.

Stigma and taboo are measured using list-style agreement questions designed by Castro & Mang (2024). For each construct, respondents are presented with four statements and asked how many they agree with, without identifying which specific statements apply. The stigma index captures beliefs related to shame, concealment, and avoidance associated with menstruation, while the taboo index captures discomfort with discussing menstruation, receiving information through media, or asking others for advice. Each index is normalized to the [0,1] range for interpretability, where higher values indicate greater stigma or stronger

taboos.

The four statements used to assess stigma are: (i) women should hide any evidence of menstruation, (ii) menstruation is something unclean, (iii) I worry about stains or odor during menstruation because others might realize I am menstruating (women) / I would feel embarrassed if I saw someone with stains from menstruation (men) and (iv) if someone knew that I am menstruating, they might treat me or look at me differently (women) / if I knew someone was menstruating, I might treat them or look at them differently (men).

The four statements measuring taboo are: (i) I would feel embarrassed to talk about menstruation with my family, (ii) I would feel embarrassed if they talked about menstruation on the TV or on the radio, (iii) I would feel embarrassed to ask advice about menstrual products from a teacher, a doctor or a health officer at the factory (women) or I would feel embarrassed to buy menstrual products for my wife or sister (men) and (iv) I prefer not to talk about menstruation with anyone.

Perceived social norms are measured using vignette-based questions that elicit respondents' beliefs about what others in their social environment consider appropriate. Respondents are asked to evaluate the social acceptability of various menstruation-related behaviors using a four-point Likert scale ranging from "very socially inappropriate" to "very socially appropriate." The vignettes are framed around a hypothetical woman living and working in a similar setting and explicitly instruct respondents to report perceived social judgments rather than their personal views. Norms are measured across several domains: communication about menstruation within families (including cross-gender parent–child conversations), purchasing disposable pads from male versus female shopkeepers, and washing and drying reusable menstrual materials in communal or visible spaces. These items are analyzed both individually and, in some specifications, aggregated into an overall social norms index.

In particular, female participants were presented with the following scenario: *"Think of a woman who is very similar to you (or wife/sister), called Romana. She lives in [insert town name] and works at [insert name of factory]. She lives in a neighborhood similar to yours with her husband, a 10-year-old son, and a 12-year-old daughter. She is Muslim. She woke up today and noticed that it was the first day of her monthly period. Think about the other people who know Romana and are her neighbors. What do you think, how socially acceptable would they find it if Romana did the following things during her menstruation? How will other people judge the following?"*. In both baseline and endline, the following statements were presented to men and women: (i) she uses cloth to manage her menstruation, (ii) she uses pads to manage her menstruation, (iii) she goes to a shop and purchases pads from a male vendor, (iv) she goes to a shop and purchases pads from a female vendor, (v) she washes menstrual cloth outside (in the communal laundry area of the neighborhood or the pond), (vi) she dries her menstrual cloth outside in direct sunlight, (vii) her husband explains to her daughter about menstruation and hygienic menstrual practices, (viii) her husband explains

to her son about menstruation, (ix) she explains to her daughter about menstruation and hygienic menstrual practices and (x) she explains to her son about menstruation.

To assess changes associated with the awareness campaign, our empirical approach is straight forward. We document within individuals changes before and after the intervention. The baseline and endline surveys were administered using identical instruments, allowing us to isolate within-person changes over time. The main estimating equation is:

$$y_{it} = \alpha + \beta Post_t + \delta_i + \varepsilon_{it}, \tag{1}$$

where y_{it} denotes the outcome of interest for individual i at time t, $Post_t$ is an indicator for the post-campaign periods. Individual fixed effects δ_i absorb time-invariant characteristics. The coefficient β captures the average change between baseline and endline. Standard errors are clustered at the individual level.

Several limitations are important for interpreting the results. First, the study does not include a contemporaneous control group, which means that we cannot fully rule out alternative explanations such as time trends or external shocks. We therefore interpret the findings as changes consistent with exposure to the campaign rather than definitive causal effects. That said, several features mitigate these concerns: the baseline-to-endline window is short, the setting is a contained workplace environment, the survey instrument is identical across waves, and the outcomes examined are tightly linked to the content of the intervention.

Second, the data and intervention were designed and implemented by the factory in collaboration with a menstrual health NGO, rather than by the research team, and the study was not preregistered nor approved through a internal review board process. Importantly, however, the survey instrument used here is the same instrument developed and preregistered for Castro & Mang (2024), which received ethical approval from the Internal Review Board of the Ludwig Maximilian University of Munich (Project 2020-02) and was pre-registered (#AEARCTR-0007163). Moreover, the intervention design directly builds on the findings of that earlier study, which was conducted in a different factory owned by the same parent company. That paper showed that reducing stigma and restrictive social norms through small-group discussions among women led to greater adoption of improved menstrual absorbents. While effective, those discussions involved groups of approximately 20 women and were not scalable to factories employing thousands of workers.

The present study can therefore be understood as a large-scale extension of that evidence. The factory and NGO designed a scalable, organization-wide intervention intended to replicate the underlying mechanism—norm and stigma reduction—using public, mixed-gender messaging. Although the data were collected by the implementation partner rather than the researchers, the use of the same measurement instruments allows for meaningful comparison of patterns across studies. Taken together, the evidence should be read as descriptive but

internally coherent, offering insight into whether workplace-based, scalable interventions can plausibly shift stigma and perceived social norms surrounding menstruation at scale.

4 Results

4.1 Before the Campaign: Menstruation as a "Public Aspect Rendered Private"

Table 1 summarizes the descriptive baseline characteristic of our sample. Most women use commercial disposable pads (74%), but a substantial share (41%) also report using improvised materials such as fabric or cloth—either exclusively or alongside pads. Reusable menstrual underwear or pads are not used, and products inserted internally (such as tampons or menstrual cups) are very rare in this setting and therefore not included in the survey. Approximately 12% of women report missing work due to menstruation over the past three months, indicating that menstrual health has direct implications for labor supply.

Panel C documents high levels of menstrual stigma and taboo. On a normalized scale from 0 to 1, men agree with 39% of stigma statements and women with 51%, a statistically significant gender difference. Stigma reflects social pressure to hide menstruation, shame around bodily evidence such as stains or odor, and fear of being judged. Taboo levels, captured through discomfort discussing menstruation with family, receiving information via media, or asking health staff for advice, are also high—27% among men and 41% among women. Women therefore experience both higher stigma and stronger taboos than men, but stigmatizing beliefs are present in both genders.

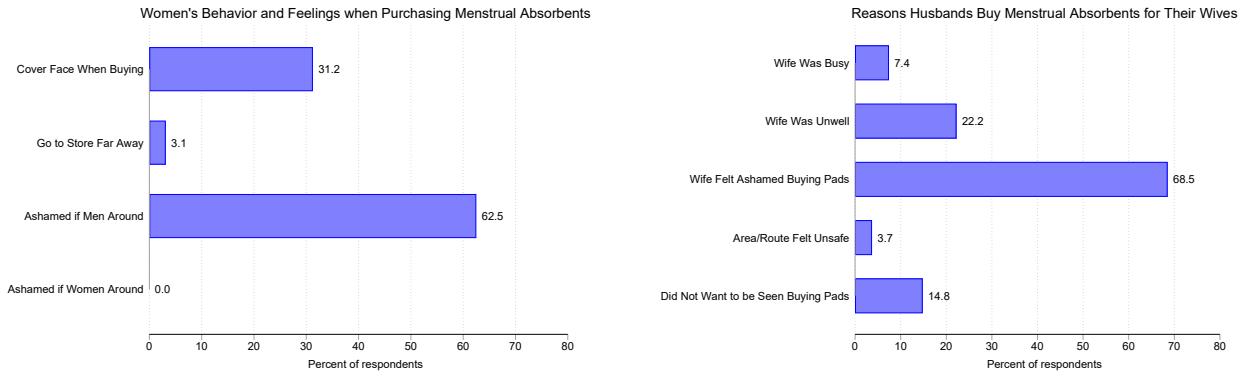
Panels D–F present social norms, defined as perceived social acceptance of menstrual-related behaviors. We converted responses into numerical scores, with a response of "very socially inappropriate" receiving a score of 0 and a rating of "very socially appropriate" receiving a score of 1. We report the mean of the social appropriateness rating, which ranges from 0 (complete agreement on "very socially inappropriate" to 1 (complete agreement on "very socially appropriate"). Norms around communication show that mother–daughter conversations are widely viewed as acceptable (a mean rating of 0.81 among men and 0.78 among women), however, cross-gender communication is not. Talking about menstruation from father to daughter, father to son, or mother to son scores only on the range 0.22–0.39, indicating that discussing menstruation with boys or men is socially inappropriate, even within families.

Norms around product acquisition also reflect gendered expectations. While the use of disposable pads is socially acceptable (0.77 for men and women), buying pads from a male shop clerk is rated much less appropriate (0.44 for men and 0.47 for women). The constraint is not the act of buying pads itself—buying from a female clerk is seen as appropriate

(0.72–0.77)—but the cross-gender interaction. This helps explain behavior. As shown in the graph in the left-side of Figure 2, among women who purchase pads themselves, 62% report feeling ashamed if men are present at the shop, and 31% state they cover their face (e.g., with a burka) to avoid recognition during purchase. What is more, only 40% of pad-using women buy pads themselves; 85% rely on husbands to buy them. Women's shame might create this dependence on men for menstrual product access.

Panel F in Table 1 shows that the strongest normative restrictions concern reusable product hygiene. Washing menstrual cloth in a communal laundry space is considered highly inappropriate (0.13 among men, 0.06 among women), and drying cloth outside in sunlight—necessary for sanitation and bacteria reduction—is similarly discouraged (0.19 men, 0.11 women). These norms reinforce concealment and could limit hygienic menstrual management, especially if indoor drying is not optimal due to lack of space or ventilation.

In sum, survey results before the campaign reveal that menstruation is a "public aspect rendered private": a normal biological event that affects women's work and public life, yet one that must be kept out of public sight and discourse, and which is scarcely discussed across gender lines. This is the context into which the awareness campaign was introduced.



(a) Women's behavior when buying pads

(b) Reasons husbands buy pads

Figure 2: Social Norms on Menstrual Communication

Notes: Panel (a) shows women's behaviour when buying pads. Panel (b) shows reasons why men said they bought menstrual absorbents for their wives or other female relatives. Values represent percentages of participants who responded affirmatively to each survey question. Note that 25 women reported not menstruating in the last 6 months due to irregular menstruation, taking injections, pregnancy or childbirth-related complications, and so did not answer the questions related to product use.

Table 1: Descriptive Statistics

	(1) Men	(2) Women	(3) Diff.
Panel A: Demographic Characteristics			
Age (years)	29.41	29.50	0.09
	(6.62)	(5.48)	(0.77)
Married (=1)	0.80	0.79	-0.01
	(0.40)	(0.41)	(0.05)
Has children (=1)	0.61	0.70	0.09
	(0.49)	(0.46)	(0.06)
Years of education	8.19	7.36	-0.83*
	(3.37)	(3.72)	(0.45)
Recently missed work due to menstruation (%)		12.17	
		(0.32)	
Panel B: Menstrual Absorbent Use (women only)			
Uses cloth/fabric (=1)		0.41	
		(0.49)	
Uses disposable sanitary pads (=1)		0.74	
		(0.44)	
Uses reusable pads/menstrual underwear (=1)		0.01	
		(0.11)	
Uses no absorbent during menstruation (=1)		0.04	
		(0.19)	
If use pads: buy pads themselves (=1)		0.40	
		(0.49)	
If use pads and don't buy themselves: husband buys (=1)		0.85	
		(0.36)	
Panel C: Stigma and Taboos (standardized indices, 0–1)			
Stigma index	0.39	0.51	0.13***
	(0.29)	(0.33)	(0.04)
Taboo index	0.27	0.41	0.14***
	(0.30)	(0.36)	(0.04)
Panel D: Social Norms – Communication About Menstruation (0–1)			
Father explains menstruation to daughter	0.32	0.22	-0.10**
	(0.30)	(0.28)	(0.04)
Father explains menstruation to son	0.39	0.33	-0.06
	(0.30)	(0.33)	(0.04)
Mother explains menstruation to daughter	0.81	0.78	-0.03
	(0.21)	(0.27)	(0.03)
Mother explains menstruation to son	0.34	0.28	-0.05
	(0.28)	(0.32)	(0.04)
Panel E: Social Norms – Disposable Products (0–1)			
Women use disposable sanitary pads	0.77	0.77	-0.01
	(0.16)	(0.23)	(0.03)
Women buy pads from male shop clerk	0.44	0.47	0.02
	(0.30)	(0.29)	(0.04)
Women buy pads from female shop clerk	0.72	0.77	0.05
	(0.25)	(0.23)	(0.03)
Panel F: Social Norms – Reusable/Washing Practices (0–1)			
Women use cloth to manage menstruation	0.54	0.50	-0.04
	(0.24)	(0.26)	(0.03)
Wash menstrual cloth in communal laundry area	0.13	0.06	-0.07***
	(0.19)	(0.17)	(0.02)
Dry menstrual cloth outside in sunlight	0.19	0.11	-0.07**
	(0.23)	(0.22)	(0.03)
Observations	122	128	250

Notes: Table reports means with standard deviations in parentheses. Columns (1)–(2) show means for men and women; Column (3) reports the difference (Women–Men). Menstrual absorbent use variables apply only to women. Stigma and taboo indices are standardized (0–1) based on survey items capturing shame, concealment, and restrictions around menstruation. All *Social Norms* variables are measured on a 0–1 scale indicating perceived social appropriateness of the behavior or practice; higher values indicate stronger normative approval.

4.2 Men Matter: Household Gatekeepers with High Openness to Engagement

The previous section showed that both men and women consider menstruation to be a private and female-coded issue, even within families and especially across gender lines. Despite this or maybe because of it, men are involved in helping women to manage their menstruation: 85% of disposable pads users say their husbands regularly buy the menstrual absorbent for them. This section further quantifies men's involvement, the reasons for it, and suggests how men's involvement in campaigns about menstruation is associated with changes in menstrual stigma and social norms.

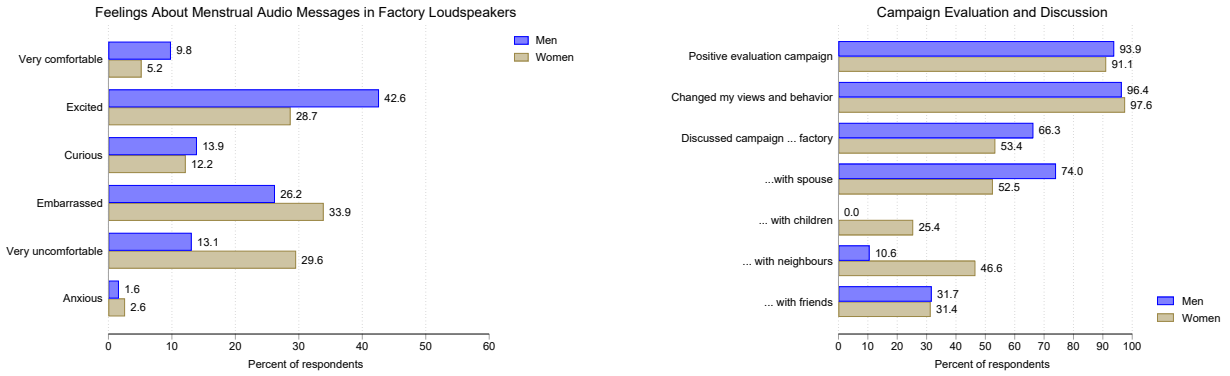
At baseline, around 50% of adult men report having purchased disposable pads for their wives. The graph in the right side of Figure 2 further illustrates the motivations behind these purchases. While several reasons are reported, the predominant one is stigma: 65% of men who bought pads state that they did so because their wife felt too ashamed to buy them herself. This shame is not driven by the presence of other women in the store—no woman reports feeling ashamed when purchasing pads in the presence of other women—but it seems to be rather the presence of men the problem. The purchasing process involves two elements that generate discomfort. First, shopkeepers and pharmacists are typically male, and this usually brings the largest part of the discomfort. Second, women fear being seen buying pads by others, such as neighbors or other customers. Consistent with this, nearly 15% of men report that they bought pads because their wife did not want to be seen purchasing them herself. These patterns indicate that stigma operates both through the gender of the vendor but also through broader concerns about public visibility [1]. Overall, menstrual stigma discourages women from purchasing menstrual products themselves, particularly in situations involving interaction with men or public exposure. Men's involvement in menstrual product acquisition therefore reflects a gendered taboo surrounding menstruation rather than resistance or disengagement on the part of men.

If many men are already involved in helping their wives manage their menstruation, and, as seen in section 4.1, express fewer stigatizing beliefs and less embarrassment discussing menstruation with others than women, are men also willing to engage more with menstrual topics, particularly a menstrual awareness campaign?

The baseline social norms displayed in section 4.1 showed that conversations between women and men or boys are viewed as socially inappropriate by both genders. Women buying pads from male shopkeepers is also considered socially unacceptable. Yet Figure 3(a) shows willingness from both genders to engage with the topic in a mixed gender setting, particularly from men. When asked how they felt about an upcoming menstrual audio campaign, men

[1] Qualitative community conversations with fathers in Australia similarly suggest that many dads are already involved in supporting menstruation, wish to be better equipped, but feel constrained by stigma, limited knowledge, and norms that construct periods as 'women's business (Barrington et al., 2025)

expressed high enthusiasm: 42% reported excitement or curiosity, and the share expressing embarrassment (26%) was lower than among women (33%). Also the share that said they would feel very uncomfortable was far below that of women (13% compared to 30%). In fact, across all positive feelings, men score above women, and across all negative emotions they score below. Men appear open and ready to engage with the campaign.



(a) Baseline feelings toward menstrual campaign

(b) Post-campaign evaluation and discussion

Figure 3: Men's and women's pre- and post-campaign attitudes and engagement

Notes: Panel (a) shows baseline feelings toward an upcoming menstrual campaign. Panel (b) shows post-campaign evaluation and discussion networks. Values represent percentage of participants who responded affirmatively to each survey question.

After the campaign was launched, this openness was not reversed. As shown in Figure 3(b), over 90% of respondents rated the campaign positively, and nearly everyone reported that it changed their views or behavior. The campaign was not ignored: 53% of women and 66% of men reported discussing the campaign with their coworkers. Importantly, discussion also did not remain confined to the factory. Around 74% of men and 54% of women discussed the jingles with their spouse, and many also spoke with friends, children, and neighbors. Men, if anything, were more likely than women to bring conversations home, suggesting that they may channel workplace norm shifts into their home lives as well.

In this campaign, men seem to be allies to menstrual normalization—they were already involved and motivated to help break the silence, and responded positively to the campaign. Where cross-gender interaction over menstruation is viewed as particularly inappropriate and uncomfortable for women, this individual openness from men makes involving them in awareness campaigns a promising avenue for reducing menstrual stigma.

4.3 Changes on Stigma, Taboos, and Social Norms associated with the Awareness Campaign

The previous subsection showed that men are not only involved in menstrual management but also open to engaging with menstrual topics when given the opportunity. We now turn

to the central question of the study: did the campaign translate this receptivity into measurable changes in behavior, stigma, and social norms? We compare pre-campaign and post-campaign survey responses for men and women. We focus on three domains: (i) menstruation-related absenteeism among women, (ii) internal beliefs captured through stigma and taboo indices, and (iii) perceived social norms regulating communication and menstrual management practices. Table 2 reports changes in our main outcomes before and after the campaign.

Table 2: Impact of the Awareness Campaign on Absenteeism, Stigma, Taboos, and Social Norms

	(1) Menstruation-Related Absenteeism	(2) Stigma	(3) Taboo	(4) Social norms
Panel A: Women				
Post-campaign	-0.071**	-0.261***	-0.259***	0.190***
	(0.032)	(0.041)	(0.039)	(0.016)
Mean Dep. Var.	0.12	0.51	0.41	0.42
Observations	122	122	122	122
Panel B: Men				
Post-campaign		-0.160***	-0.130***	0.170***
		(0.045)	(0.048)	(0.020)
Mean Dep. Var.		0.39	0.27	0.46
Observations		128	128	128
Panel C: Difference				
Post		-0.160***	-0.130**	0.170***
		(0.025)	(0.048)	(0.020)
Woman × Post-campaign		-0.100*	-0.128**	0.019
		(0.056)	(0.043)	(0.025)
Mean Dep. Var.		0.45	0.34	0.44
Observations		500	500	500

Notes: The table compares baseline and post-campaign outcomes within the same individuals. Panel A reports effects for women, Panel B for men, and Panel C tests gender differences. The coefficient on *Post-campaign* measures the average change in each outcome relative to baseline. In Panel C, the interaction term *Woman* × *Post-campaign* indicates whether changes for women differ from those for men.
Menstruation-related absenteeism (Column 1) measures whether a woman self-reports to have missed at least one day of work due to their period in the past three months. *Stigma* and *Taboo* indices (Columns 2–3) are normalized to the [0,1] scale based on survey items capturing shame, concealment, and restrictive expectations. *Social norms* (Column 4) reflect the perceived social acceptability of menstruation-related behaviors, also normalized to [0,1], where higher values indicate greater acceptance and fewer restrictions.
Standard errors clustered at the individual level are shown in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We observe substantial improvements across all domains. We first examine menstruation-

related absenteeism among women because this serves as a manipulation check of whether the campaign generated unintended consequences of backlash for women. If the campaign generates increased discomfort among women during their period, their self-reported attendance to work could be reflected in this measure. Self-reported absenteeism declines by 7 percentage points from a baseline mean of 12%, implying that the probability a woman missed work due to her period falls by more than half relative to baseline levels. This result should be interpreted with caution and not as a stand alone evidence. Absenteeism is self-reported rather than drawn from administrative records, in addition, the decline could also reflect factors unrelated to stigma, such as seasonality in production, increased use of menstrual products provided by the factory, or greater use of pain medication to manage menstrual pain, so we cannot pinpoint exactly what drives this reduction. Nonetheless, the finding provides reassurance that the campaign did not generate negative labor supply responses or backlash—for example, if increased visibility of menstruation heightened stress, fear of mockery by male peers, or discomfort that could lead women to miss work.

Stigma and taboo decline substantially following the campaign. Among women, stigma decreases by 0.261 points and taboo by 0.259 points on the normalized [0,1] scale. The magnitude of these changes is strikingly similar to those documented in Castro & Mang (2024). In that randomized controlled trial, women exhibited baseline stigma levels equivalent to approximately 0.42 on a [0,1] scale—almost identical to the baseline levels observed here—and stigma declined by about 0.22 points after a more intensive, small-group discussion intervention. The close correspondence in effect sizes suggests that the scalable, organization-wide campaign studied here achieved norm and stigma reductions comparable to those detected in a randomize controlled trial with a small-scale intervention.

Men also experience meaningful declines in stigma and taboo, though smaller in magnitude (0.16 and 0.13, respectively). Finally, the interaction terms in Panel C indicate that taboo and stigma declines more for women than for men, which aligns with baseline conditions: women faced stronger stigma and taboos initially and therefore had greater scope for change.

Social norms governing menstrual behavior also become more permissive. Perceived social acceptability increases by 0.19 points for women and by 0.17 for men, which represent changes of around 45% evaluated at the pre-campaign means. So we document changes not only in personal beliefs but in expectations of how others would react to menstrual conversation or management practices. Given how restrictive norms were at baseline, even moderate improvements represent a meaningful shift in public space visibility and comfort around menstruation.

Overall, the campaign did not have a negative effect on women's self-reported participation at work, it reduced stigma, and taboos, and it relaxed social norms for both men and women. That men also exhibit large and positive shifts reinforces the earlier finding that

male involvement is not a barrier to destigmatization. Instead, men appear responsive to information and are an important channel through which gendered menstrual taboos can be overcome.

4.4 Permission to Speak: Normalizing Menstrual Conversation Across Gender and Generations

The previous section showed that overall social norms surrounding menstruation became more permissive after the campaign. We now examine whether all norms shifted equally or whether some domains reacted more strongly than others. Since the intervention relied heavily on spoken audio messaging, modeling dialogue in shared workspaces, we expect communication norms to change the most.

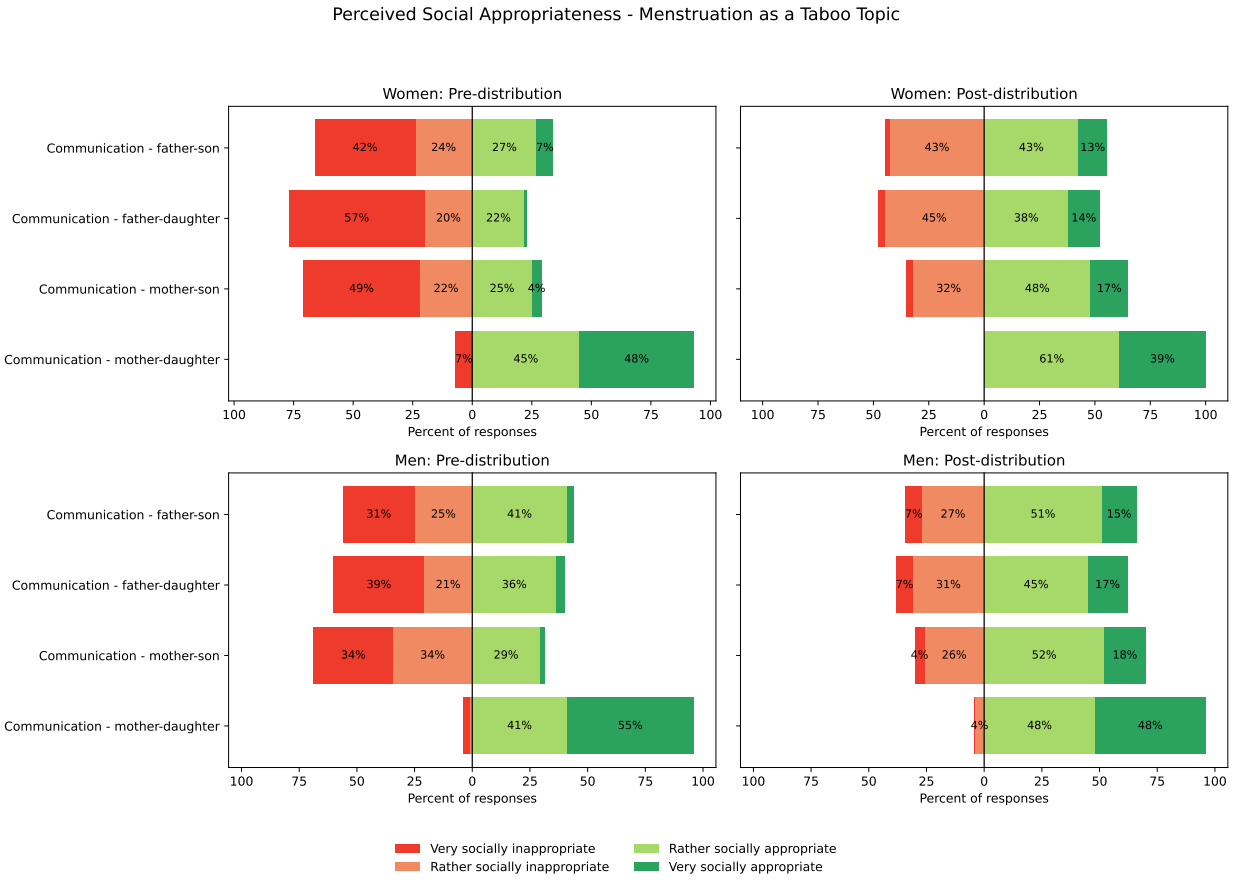


Figure 4: Social Norms on Communication About Menstruation

Notes: Figure presents responses to Likert-scale questions measuring social norms surrounding communication about menstruation. Categories range from "Very socially inappropriate" to "Very socially appropriate." Bars display the distribution of responses across the four categories for women (top panel) and men (bottom panel), measured before and after the campaign. Respondents assessed how socially acceptable it is *within their social environment* (as opposed to their personal preference) for fathers to explain menstruation with daughters or sons, and for mothers to explain menstruation with either daughters or sons.

Figure 4 shows changes in the perceived social appropriateness of communication about menstruation within families. The largest shifts occur in cross-gender communication between mothers and sons. Before the campaign, 49% of women and 34% of men classified mother–son discussions of menstruation as "very socially inappropriate," and an additional 22% (women) and 34% (men) rated them as "socially inappropriate." After the campaign, the distribution shifts toward acceptance: 65% of women and 70% of men now consider such communication either socially appropriate or very socially appropriate, and the extreme category of "very socially inappropriate" disappears. Restrictive norms governing fathers' communication with daughters and sons also decline significantly (Appendix Table A1 reports Kolmogorov–Smirnov tests confirming statistically significant shifts in the full response distributions).

These results indicate that the campaign affected not only conversations on the factory floor, as documented in Figure 3, but also broader social norms governing communication within households—precisely the domains modeled in the campaign's audio skits. Rather than merely shifting individual attitudes, the intervention appears to have relaxed shared expectations about who can speak about menstruation and with whom. As open communication is a necessary precondition for access to information and negotiation over product use, this is a promising signal that such campaigns can change overall behavior relevant to menstrual health.

4.5 When Men Sell Menstrual Products: The Campaign's Impact on Norms Regulating Cross-Gender Menstrual Products Transactions

We documented that restrictive communication norms relating to cross-gender discussions about menstruation weakened following the campaign. We now examine whether social norms regarding another kind of cross-gender interaction involving menstruation also become more permissive: women purchasing menstrual products from men. As shown in Section 4.2, many women rely on husbands to purchase pads on their behalf, largely because buying pads from male shopkeepers is perceived as shameful and socially inappropriate. If these norms also shift, it becomes more plausible that such campaigns can generate behavioral effects in women's menstrual health management, rather than remaining confined to changes in attitudes alone.

Figure 5 presents the distribution of perceived appropriateness of using and purchasing disposable pads before and after the campaign. At baseline, buying from female shopkeepers was completelly socially acceptable, while the norms surrounding purchasing from male shopkeepers were more restrictive: around 23% of female and 32% of male respondents classified it as "very socially inappropriate," and 18% and 13% respectively perceived it as "socially in-

appropriate" category. After the campaign, perceptions on this norms shift markedly toward acceptance with the changes in distributions being statistically significant at the 1% level (see Table A1 in Appendix that reports the Kolmogorov-Smirnov test of differences in distributions). Using such commercial products was fully appropriate at baseline, and continues to be so after the campaign. Thus, the norm does not restrict the use of disposable pads, nor the act of purchasing them in general. Buying pads from female shopkeepers is widely seen as socially acceptable, which indicates that commercial acquisition itself is not problematic. What is considered inappropriate is purchasing menstrual products from men. This matters because, in this context, shopkeepers and pharmacists are almost exclusively male. As a result, women face discomfort both in asking a male vendor for pads. The barrier therefore lies in the cross-gender interaction required by the transaction, rather than in opposition to the products themselves, and the awareness campaign weakens this restriction.

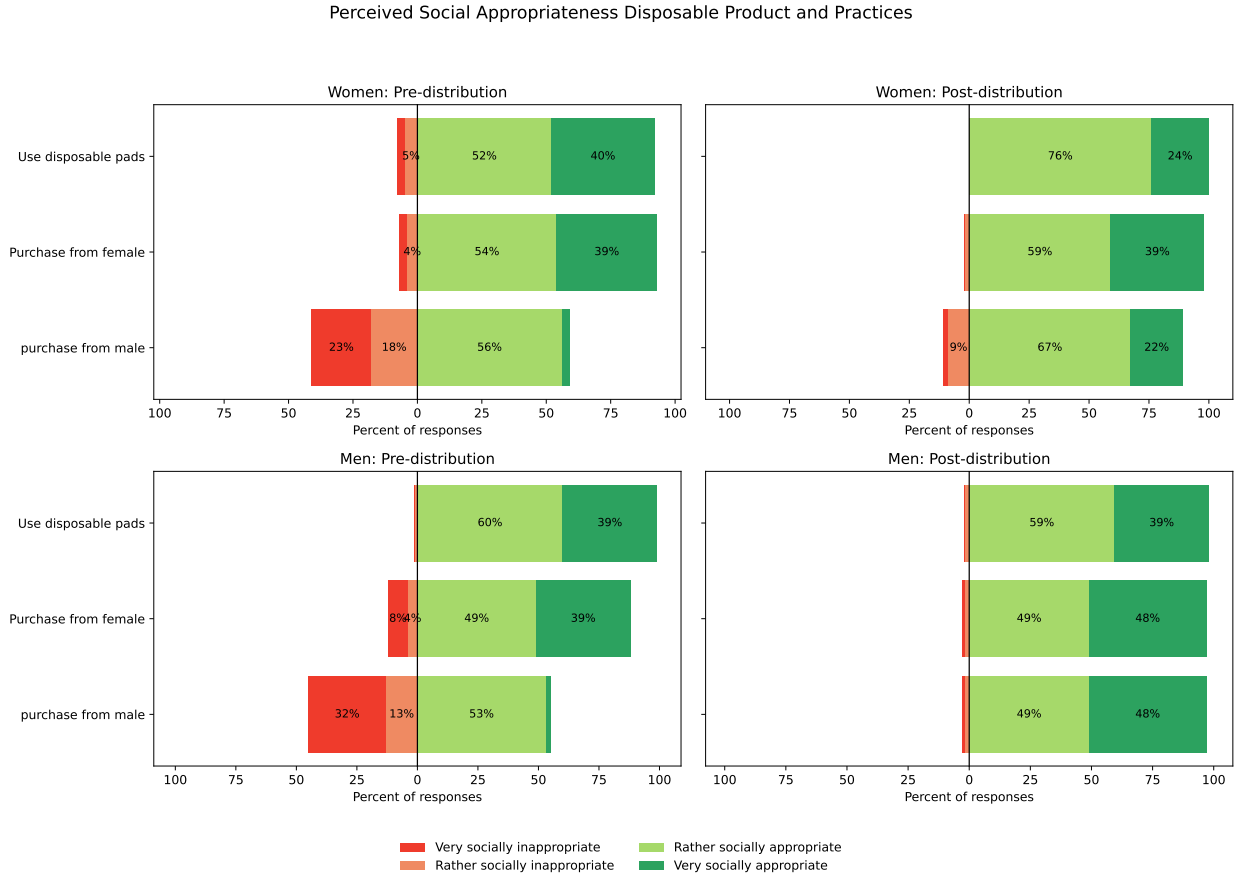


Figure 5: Social Norms Regarding Disposable Menstrual Products and Practices

Notes: Figure presents responses to Likert-scale questions on the perceived social acceptability of practices related to disposable menstrual products. Categories range from "Very socially inappropriate" to "Very socially appropriate." Bars show the distribution of responses across the four categories for women (top panel) and men (bottom panel), measured before and after the campaign. Respondents evaluated how socially acceptable it is *within their social environment* (rather than their personal opinion) for women to use disposable pads and to purchase pads from either a female or a male shop clerk.

The result aligns with the broader pattern in the campaign—normalizing menstruation in a public space—not only within conversations but also in everyday actions that were previously met with social disapproval. In short, the campaign helped legitimize cross-gender transactions around menstrual products, creating a more permissive environment in which women can access disposable pads directly.

4.6 When Men See Menstrual Practices: The Campaign's Impact on Norms Regulating Reusable Product Maintenance

A final question is whether normalization extended to menstrual hygiene practices surrounding the other type of menstrual products common in the setting: reusable menstrual products. Reusable menstrual products face different barriers, they do not require to be frequently purchased, however, they need to be repeatedly washed and cleaned. The campaign explicitly discussed the importance of properly washing and drying reusable menstrual products, a relevant margin given that 41% of women in the sample report using improvised fabrics as menstrual absorbents. Reusable menstrual cloth or the underwear distributed with the campaign must be washed and thoroughly dried between uses. Drying menstrual absorbents outdoors or in direct sunlight is important for hygiene, as it helps reduce moisture and bacterial growth. In settings with limited private space, women may also rely on communal washing facilities or shared water sources to clean their laundry. At baseline behaviors related to the maintenance of reusable products were the most socially unacceptable behaviors recorded. Figure 6 shows that this largely remained the case after the campaign.

The share of respondents classifying outdoor drying or communal washing as socially inappropriate declines slightly after the campaign, but the dominant perception remains restrictive: public handling of used menstrual materials continues to be viewed as socially unacceptable. While the distributions of responses before and after the campaign are statistically different (see Table A1 for Kolmogorov–Smirnov tests), the shifts occur primarily within the restrictive range—from "very socially inappropriate" to "socially inappropriate." These norms appear more entrenched than those governing communication or commercial transactions.

This pattern suggests that the campaign was effective at reducing silence and embarrassment in conversational and transactional domains, but less able to shift norms tied to the public visibility of menstrual blood or used materials. The distinction is important. Talking about menstruation involves permission to speak and breaks a taboo; buying pads from a male clerk involves increased visibility of menstrual practices and crossing a gender boundary. Washing menstrual absorbents together with other laundry in communal washing spaces, or drying menstrual cloth outdoors also makes menstrual practices more visible to both genders. But the visibility is greater and touches more deeply on ideas of menstrual blood as impure

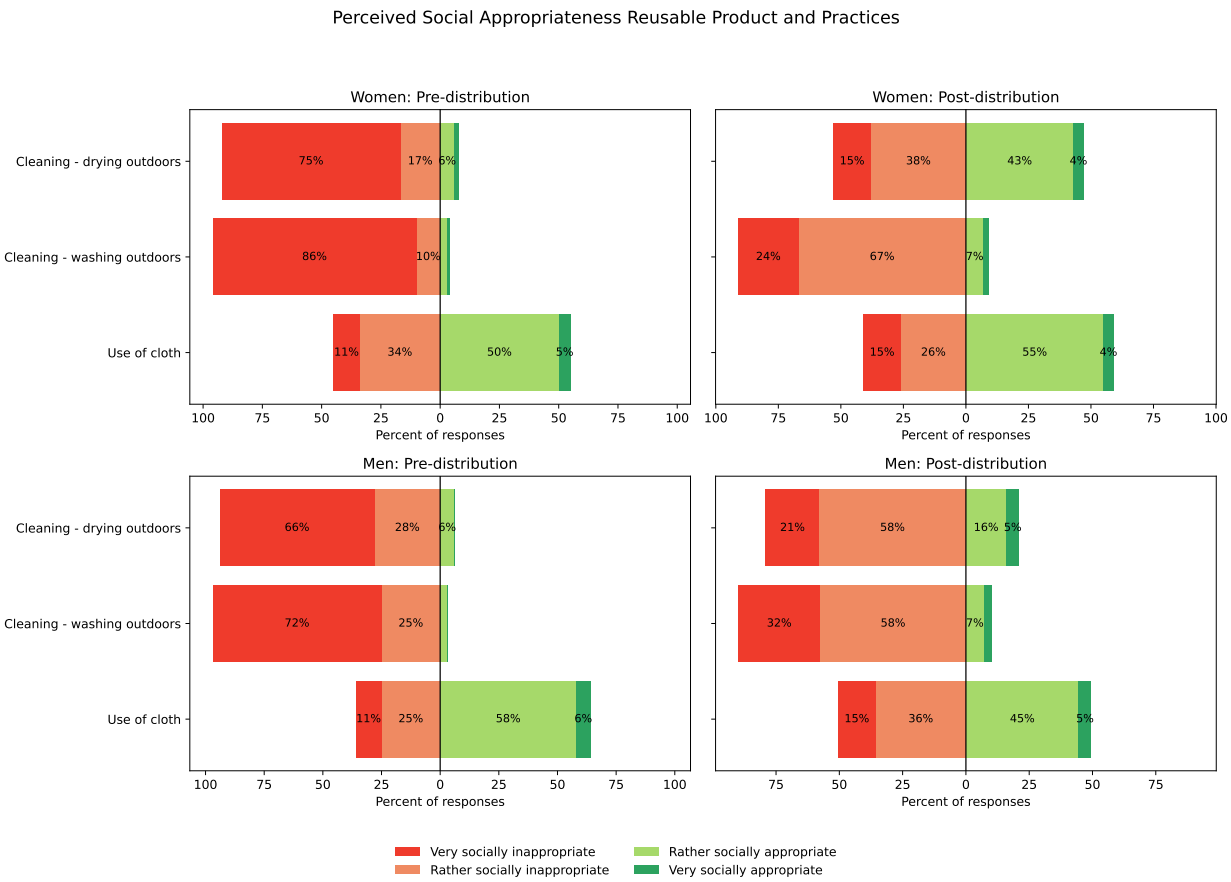


Figure 6: Social Norms Regarding Reusable Menstrual Products and Practices

Notes: Figure presents responses to Likert-scale questions on the perceived social acceptability of practices related to reusable menstrual absorbents. Categories range from "Very socially inappropriate" to "Very socially appropriate." Bars show the distribution of responses across the four categories for women (top panel) and men (bottom panel), measured before and after the campaign. Respondents evaluated how socially acceptable it is *within their social environment* (rather than their personal opinion) for women to dry menstrual absorbents outdoors, wash them in communal facilities, and use cloth as a menstrual absorbent.

and polluting. While information and conversation can make menstruation discussable, they are more limited when it comes to norms surrounding the visibility and proximity of used menstrual products. This limitation is particularly consequential for women who rely on improvised absorbents because they cannot afford disposable products or lack independent access to markets. These women are also more likely to live in crowded housing with limited private space, making discreet washing and drying especially difficult, and may therefore store menstrual materials without properly drying them in order to avoid being seen.

5 Conclusion and Implications

This paper highlights both the opportunities and the limits of a smartly designed workplace campaign that aimed to reduce menstrual stigma among factory workers. The findings show that organizations can play a meaningful role in breaking long-standing taboos that restrict women's lives, by making menstruation a legitimate topic in shared spaces and by including men as allies rather than treating them solely as barriers. At the same time, the results also reveal the boundaries of such efforts: while attitudes and communication norms can shift through low-cost messaging, deeply rooted social norms around washing and drying reusable materials remain more resistant to change.

An important contribution of this project is to illustrate how organizations and NGOs can build directly on research evidence. The idea for this campaign emerged from a smaller but rigorous study in which one-hour, women-only discussion groups in factories reduced menstrual stigma and increased uptake of improved absorbents (Castro & Mang, 2024). The present study asks whether those insights can be scaled through an organization-wide intervention that reaches thousands of workers at once, and documents that a large-scale rollout can generate similar changes in survey-based measures of stigma and perceived norms.

There is still considerable scope for further work in this setting and more causal evidence to uncover. One priority is to better understand how to weaken restrictive norms around washing and drying menstrual materials in communal spaces. While it is intuitive that people wish to hide visibly blood-stained items, it is less obvious why fully cleaned materials with no distinctive shape must also remain completely concealed; this pattern points to a broader belief that menstruation and anything associated with it is "dirty," regardless of whether blood is present. Future research combining randomized designs, administrative labor data, and qualitative work could clarify how far workplace campaigns can shift such entrenched norms, how durable these changes are, and how they translate into health, comfort, and productivity gains in low- and middle-income countries.

6 Appendix

Table A1: Social Norms

Panel: Women	*A: Before Campaign - Baseline*						*B: After Campaign - Endline*						K-S Test
			% of respondents						% of respondents				
	Mean	SD	- -	-	+	++	Mean	SD	- -	-	+	++	
Communication about Menstruation													
Father explains menstruation to daughter	0.22	0.28	**57**	20	22	1	0.54	0.25	3	**45**	38	14	0.00***
Father explains menstruation to son	0.33	0.33	**42**	24	27	7	0.55	0.24	2	**43**	**43**	13	0.00***
Mother explains menstruation to daughter	0.78	0.27	7	0	45	**48**	0.80	0.16	0	0	**61**	39	0.68
other explains menstruation to son	0.28	0.32	**49**	22	25	4	0.59	0.25	3	32	**48**	17	0.00***
Disposable Products													
Women use disposable sanitary pads	0.77	0.23	3	5	**52**	40	0.75	0.14	0	0	**76**	24	0.11
Women buy pads from male shop clerk	0.47	0.29	23	18	**56**	3	0.70	0.20	2	9	**68**	22	0.00***
Women buy pads from female shop clerk	0.77	0.23	3	4	**54**	39	0.79	0.17	0	2	**59**	39	0.99
Reusable Products													
Women use cloth to manage menstruation	0.50	0.26	11	34	**50**	5	0.49	0.27	15	26	**55**	4	1.00
Wash menstrual cloth in communal laundry area	0.06	0.17	**86**	10	3	1	0.29	0.21	24	**67**	7	2	0.00***
Dry menstrual cloth outside in sunlight	0.11	0.22	**76**	17	6	2	0.45	0.26	15	38	**43**	4	0.00***
Panel: Men													
Communication about Menstruation													
Father explains menstruation to daughter	0.32	0.32	**43**	23	30	4	0.57	0.28	7	31	**45**	17	0.00***
Father explains menstruation to son	0.39	0.30	31	25	**41**	3	0.58	0.26	7	27	**51**	15	0.00***
Mother explains menstruation to daughter	0.82	0.23	3	1	41	**55**	0.81	0.19	0	4	**48**	**48**	0.96
Mother explains menstruation to son	0.33	0.28	**34**	**34**	29	2	0.61	0.25	4	26	**52**	18	0.00***
Disposable Products													
Women use disposable sanitary pads	0.79	0.17	0	1	**60**	39	0.79	0.17	0	2	**60**	39	1.00
Women buy pads from male shop clerk	0.42	0.31	32	13	**53**	2	0.69	0.24	4	10	**60**	26	0.00***
Women buy pads from female shop clerk	0.73	0.28	8	4	**49**	39	0.81	0.20	1	2	**49**	48	0.76
Reusable Products													
Women use cloth to manage menstruation	0.53	0.26	11	25	**58**	6	0.47	0.27	15	36	**45**	5	0.19
Wash menstrual cloth in communal laundry area	0.10	0.18	**72**	25	3	0	0.27	0.24	32	**57**	7	3	0.00***
Dry menstrual cloth outside in sunlight	0.14	0.20	**66**	28	6	0	0.35	0.25	21	**58**	16	5	0.00***

This table presents normalized means and standard deviations of the social norms elicitation questions for men and women, as well as the share of respondents for each possible option of the 4-point Likert scale: very socially inappropriate (–), rather socially inappropriate (-), rather socially appropriate (+), very socially appropriate (++). Responses are reported for baseline and endline. The p-value for the Kolmogorov–Smirnov test, assessing whether distributions are equal across baseline and endline, is shown in the last column.

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