

Reaching women at work with health programming in Bangladesh: results of difference-in-differences analysis among female factory workers

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Abstract: *The rapid growth of Bangladesh's ready-made garment sector has transformed the country's economy while also employing a predominantly female workforce. Companies have begun collaborating with NGOs to provide health messages to and expand health services for workers. This study evaluates the effect of the Health Enables Return (HER) health model's approach of using peer health educators to deliver health messages and increased availability of health products. Using repeated cross-sectional data from female workers in HERhealth and comparison factories between May 2015 and March 2017, baseline (n = 1704) and endline (n = 1503) samples were matched on eight characteristics and then difference-in-differences estimations were used to determine the effect of the HERhealth model on knowledge and behaviours. The average changes over time in knowledge and behaviours were statistically different between the HERhealth and comparison factories. Knowledge of when a woman is at higher risk for pregnancy during her menstrual cycle increased from baseline to endline in both groups but was 12 percentage points greater in the HERhealth factories than in the comparison. An increase in family planning use among ever-married women was observed in the HERhealth factories but decreased in the comparison factories leading to a 12 percentage point difference-in-differences. The greatest effect of the HERhealth model was observed on women's use of sanitary products for menstrual management which significantly increased in both groups, but the increase was 35% greater in the HERhealth factories. The HERhealth model is effective in increasing knowledge and in improving health behaviours when health products are available in factory infirmaries.*
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Introduction

The ready-made garment (RMG) manufacturing industry in Bangladesh has grown rapidly over the past three decades, becoming the major manufacturing sector in the country. The RMG industry accounts for 11% of the country's GDP, and 84% of all Bangladeshi exports (around US\$34 billion in the financial year 2018–2019).¹ The RMG sector has also created new employment opportunities for millions in Bangladesh, particularly for women who make up 85% of the four million RMG workers.² Bangladesh's RMG sector is seen to contribute to women's autonomy, self-

sufficiency, mobility, financial literacy and inclusion, and overall empowerment,^{3,4} providing young women with an alternative path in a country with endemic gender inequities and high rates of early marriage.⁵

Most female RMG workers migrate from rural areas and are unmarried when they begin working.⁴ Many of them are vital earners for their natal households and active savers.^{3,6–8} Although the RMG sector provides economic opportunities for women, it also brings increased health risks. Examples include respiratory problems, joint

pain, and anxiety.^{9–13} Long hours and insufficient breaks are some of the barriers preventing women from seeking health services, including antenatal care, outside of the factory in Bangladesh.^{12–15}

All individuals have the right to SRH information and services, as outlined in Article 12 of the Economic, Social and Cultural Rights Covenant¹⁶ and in objective 4.6 in Bangladesh's 2012 National Population Policy.¹⁷ As many Bangladeshi women working in the RMG sector are in the earlier half of their reproductive years,¹⁴ they should have access to comprehensive sexual and reproductive health (SRH) and family planning (FP) information and services. An assessment of the SRH needs of female factory workers in Bangladesh found that knowledge and use of FP was high, but knowledge of sexually transmitted infections (STIs) and of measures to prevent STIs was low.¹⁴ The same study found that less than half of the women surveyed used sanitary menstrual hygiene products.

Typically, factory workers in Bangladesh have limited access to FP/SRH information and services and menstrual hygiene products at work, similar to other countries with predominantly female garment sectors. Studies from Cambodia and Vietnam suggest that women in the RMG sectors have challenges accessing maternal and SRH/FP services.^{18–21}

Workplace health programming

Over the past decade, industry stakeholders, national and international organisations have increased efforts to address the health, safety, and wellbeing of RMG workers. Beyond occupational safety and health, many public health advocates argue for companies to include women's health as part of their worker health guidelines and standards, and for the global community to elevate workers' health on the public health agenda.²² Industry stakeholders have also begun collaborating to expand health services in factory clinics and to provide workers with targeted health messages and interventions.²³

As workplace health programmes are relatively new, few have been evaluated. In South Africa, RMG workers who participated in a 6-week wellness programme showed significant improvements in perceived quality of life and in some exercise-related behaviours.²⁴ An evaluation of Gap Incorporated's PACE programme – a life skills programme – in five countries found an increase in women's reported self-esteem and self-

efficacy.²⁵ Few workplace programmes, however, focus on SRH/FP and even fewer have been rigorously evaluated. In Cambodia, the Partnering to Save Lives project focused on improving female workers' access to SRH services and showed an increase in modern contraceptive use.¹⁸ Results on SRH and STI knowledge varied.¹⁸ The Worker-Health project in Cambodia combined service delivery, advocacy, and research to improve SRH/FP outcomes and showed a high uptake of SRH/FP services, including those offered in the factory.²⁶

The HERhealth model in Bangladesh

Led by Business for Social Responsibility (BSR), the Health Enables Return (HER) project brings together global brands, suppliers, and NGOs to implement a series of interventions focused on health and financial inclusion.²⁷ One pillar of the HERproject is HERhealth, which delivers health information directly to female factory workers while strengthening the capacity of factory clinics to deliver expanded health services, specifically expanded availability of health products for workers. To date, HERhealth has been implemented in nine countries including Bangladesh.

In Bangladesh, the HERhealth model used peer health educators (PHEs) to disseminate health information in factories during work hours. PHEs were RMG workers nominated by factory management based on their education and leadership qualities. BSR and Change Associates, a Bangladeshi NGO, trained PHEs (in addition to Female Compliance Officers who also worked in the factories) in confidentiality, effective communication strategies and specific health topics. The health information was tailored to the Bangladeshi context and needs of workers. PHEs were therefore trained on the following topics: (1) our health is important (an introductory module); personal hygiene and waterborne diseases; (2) eating healthy; female body and menstruation; (3) maternal health and FP; (4) preventing STIs, HIV & AIDS; (5) malaria, dengue fever and reproductive cancers; and (6) occupational safety and health.²⁸ Based on the factory size, approximately 24–80 PHEs were trained (Appendix 1). The female worker to PHE ratio ranged from 21:1 to 26:1. PHEs were expected to impart their knowledge from the training to other workers at the factory during work breaks, bus rides and other

opportunities when workers gathered. Given the number of workers in each factory, PHEs disseminated health information on one topic over three months before moving onto the next topic, for a total of 18 months.²⁸ Although PHEs were not supplied with job aids or informational materials to provide to fellow workers, they were able to contact Female Compliance Officers with questions related to the health topics. PHEs were not compensated for disseminating health information.

As part of the HERhealth project, Change Associates also worked with suppliers and management in the HERhealth factories to offer menstrual hygiene products and FP methods in the factory infirmaries. As a result, the HERhealth factories purchased menstrual hygiene products at a reduced rate and women workers in the HERhealth factories were able to buy these products at the factory infirmary. Prices of the menstrual hygiene products varied by factory. However, due to the conservative culture in Bangladesh, the factory managers had not brought in FP methods by the end of the evaluation. Additional information on HERhealth intervention is documented in a research report.²⁸

From 2015 to 2017, the Evidence Project, the United States Agency for International Development's flagship project for implementation science in FP, partnered with BSR to evaluate the effectiveness of the HERhealth model for improving female factory workers' health and identify ways to optimise the HERproject for scale-up. Using a difference-in-differences analysis, we present findings from the evaluation of the HERhealth model.

Methods

Design/data source

We used data from a larger quasi-experimental, mixed-methods evaluation that assessed the effect of the HERhealth model on workers' health knowledge and behaviours for this analysis. Specifically, we used cross-sectional data collected from interviews with female factory workers before and after the HERhealth model took place in four HERhealth and four comparison factories. Cross-sectional data were collected instead of panel data due to the logistical constraints in contacting the same women over a two-year period in this setting. One HERhealth factory was located in Dhaka, one in Narayanganj, and two in Gazipur.

The research team selected four comparison factories based on characteristics similar to the HERhealth factories, including number and age of employees and type of products manufactured. Three comparison factories were located in Dhaka and one in Narayanganj. Within each factory, systematic random sampling was used to identify eligible participants (women aged 18–49 years).²⁸

The questionnaire used for the baseline and endline interviews was adapted from previous tools used by BSR in other countries and by the Growing Up Safe and Healthy programme which evaluated peer-to-peer sexual and reproductive health sessions.²⁹ The HERhealth implementing partners, BSR and Change Associates, provided feedback to the questionnaire before it was piloted among a group of factory workers not employed in the HERhealth or comparison factories.

Female interviewers, trained in research ethics and the study's goal, tools and consent forms, contacted potential participants to confirm eligibility, provide information on the study and obtained written consent. Interviewers used tablets or a paper copy of the questionnaire in Bangla to administer a structured interview. The interview took place in a private location in the factory and included questions on: (a) socio-demographic characteristics, (b) SRH/FP; (c) maternal health; and (d) general health and nutrition. The endline tool only included questions related to experience with the HERhealth intervention for those in the intervention factories. The questions used for this analysis were the same in the baseline and endline interviews (Additional File 1). Interviewers conducted baseline interviews with 1,725 respondents between May and September of 2015 and endline interviews with 1,564 different respondents between January and March of 2017. The study protocol received IRB approvals from the Population Council (Protocol 656, 19 June 2014) and the Bangladesh Medical Research Council's Ethics Research Committee (Protocol BMRC/NREC/2013-16/643 15 February 2015).

Study sites

The HERhealth project was implemented in factories in Dhaka, Gazipur and Narayanganj, which account for the largest number of RMG factories in Bangladesh: 1961 in Dhaka, 1297 in Gazipur and 734 in Narayanganj.³⁰ Dhaka is the capital of Bangladesh and has a population of

approximately 21.7 million.³¹ Gazipur and Narayanganj have substantially smaller populations with about 1.1 and 1.6 million, respectively, as of the last census.³² All three cities are part of the Dhaka division. Most people living in Dhaka are Muslim, the average life expectancy is 70 years and about 34% of households live below the poverty line.³¹ As of 2018, approximately 62% of married women of reproductive age in the Dhaka division were using any FP method and 53% were using a modern method.³³ This is slightly higher than the national average, where 62% of married women of reproductive age use any FP method and 52% use a modern method.³³

Dependent variable

In this analysis, we focused on SRH knowledge and behaviours. We used five knowledge-dependent variables in this analysis. The first was respondents' knowledge of the risk period for pregnancy during the menstrual cycle. Women were asked "*Do you know when during a month a woman is more likely to get pregnant, if she has sexual relations?*". A response between 10 and 20 days of a women's menstrual cycle was considered correct and coded as 1. All other responses were coded as 0. Two questions about HIV and STI prevention measures were asked "*Could you please tell me all the ways by which a person can protect himself/herself from becoming infected with HIV/AIDS?*" and "*what are the things a person can do to prevent STIs?*". Those who named at least one HIV protection measure were coded as 1 and those who named none were coded as 0. Similarly, those who named at least one STI prevention measure were coded as 1 and those who named none were coded as 0. Women were first asked if they had heard of HIV or other STIs, and those who had not heard of HIV ($n = 100$ HERhealth and $n = 178$ in comparison at baseline and $n = 35$ HERhealth and $n = 177$ in comparison at end-line) or other STIs ($n = 549$ HERhealth and $n = 628$ in comparison at baseline and $n = 170$ HERhealth and $n = 400$ in comparison at end line) were skipped from the prevention questions and therefore coded as 0.

We also asked women "*What are the signs and symptoms that indicate a woman is suffering from sexually transmitted diseases?*" and "*What are the signs and symptoms that indicate a man is suffering from sexually transmitted diseases?*". Those who correctly named one or more symptom(s) in women were coded as 1 and those who

named none or had not heard of STIs were coded as 0. The same process was applied to the male STI symptom variable.

Three behavioural variables were included in this analysis: (1) current use of any FP method; (2) current use of any modern FP method; and (3) use of a sanitary menstrual hygiene product. Because of the sensitive nature of contraception in Bangladesh, only ever married women were asked about FP use. Interviewers listed all FP methods available in Bangladesh, method by method, and asked ever-married respondents whether they had heard of each method. If a respondent had heard of a specific method, she was asked if she was currently using that method. For use of any FP method, women who reported using at least one method were coded as 1 and 0 if they were not currently using a FP method. For use of any modern method, women who reported using at least one of the following methods were coded as 1: Lactational Amenorrhea Method, emergency contraceptives, condoms, pills, injectables, implant, IUD, female sterilisation, or vasectomy. Respondents who reported using no method or a traditional method such as withdrawal or the rhythm method, were coded as 0.

All women were asked "*What do you usually use for managing menstrual blood?*". Those who responded with sanitary pad or tampon were coded as 1, and those who responded with cloth, cotton or other, were coded as 0.

Propensity score matching

We used one-to-one propensity score matching on eight respondent characteristics to balance the samples between the HERhealth and comparison samples: (1) age; (2) literacy; (3) marital status; (4) number of living children; (5) lengthen of time since migration; (6) wealth quintile; (7) involvement in health decision making; and (8) position in the factory. Baseline samples were matched using Stata's *psmatch2* command with the callipers set to 0.01. The *pstest* command was used to determine the variable balance between groups and 22 observations that were off-support were dropped. The same process was repeated with the endline samples and 2 observations that were off support were also dropped. The final baseline and endline samples are 1704 and 1503 respectively. Results from the propensity score matching analysis are available upon request.

Difference-in-differences estimation

We conducted Pearson chi2 tests to assess differences in characteristics between HERhealth and comparison samples, and between baseline and endline within samples. We found significant differences in four of the eight characteristics between baseline and endline in the HERhealth factories (literacy, position in the factory, migration status and involvement in health decision making). Significant differences were observed in five of the eight characteristics in the comparison factories (literacy, position in the factory, migration status, marital status and wealth quintile).

To determine the effect of the HERhealth model on each knowledge and behaviour variable, we then used difference-in-differences (DiD) estimations using the “diff” command in Stata. DiD models compare changes in outcomes that occur due to an intervention compared to changes that would normally occur over time in the absence of an intervention using a comparison group. The following equation was used to calculate DiD estimates of the HERhealth model, where δ_{DD} equals the observed changes over time in the HERhealth sample minus the observed changes over time in the comparison sample.

$$\delta_{DD} = (\bar{Y}_{\text{Endline}}^{\text{HERhealth}} - \bar{Y}_{\text{Baseline}}^{\text{HERhealth}}) - (\bar{Y}_{\text{Endline}}^{\text{Comparison}} - \bar{Y}_{\text{Baseline}}^{\text{Comparison}})$$

Results

Table 1 presents respondent characteristics by intervention and comparison groups at baseline and endline. Among the women interviewed at baseline, 50% in the HERhealth factories and 58% in the comparison factories were between 18 and 24 years of age. Many could read and write (83% in the HERhealth and 77% in the comparison factories) and were married (75% in the HERhealth and 61% in the comparison factories). At least half of women in the HERhealth and comparison factories had at least one living child (59% and 52% respectively).

Many women (44%) in the HERhealth factories migrated to their respective city six or more years before the baseline interview compared to 27% in the comparison factories. In terms of position in the factory, around 60% of women in the HERhealth and comparison factories

were machine operators. About one-quarter of women reported making their own health decisions (26% in the HERhealth and 23% in the comparison factories). At baseline and endline, there were significant differences in respondent characteristics between the two groups. Similar distributions were generally observed from baseline to endline within the intervention and comparison groups.

Difference-in-differences of knowledge between HERhealth and comparison factories

The DiD estimates for the five knowledge outcome variables are presented in Table 2. Knowledge among female workers of when a woman is at higher risk for pregnancy increased from baseline to endline in both groups. The increase was 12% greater in the HERhealth factories. Significant differences were only observed in the proportion of women who had heard of HIV from baseline to endline in the HERhealth factories whereas significant differences in the proportion of women who had heard of STIs were observed in both HERhealth and comparison factories. The changes over time were statistically greater in the HERhealth factories (data not shown). The proportion of women who correctly named at least one HIV prevention measure increased from baseline to endline in the HERhealth factories (74% to 83% respectively) but decreased in the comparison factories (62% to 50%). The DiD estimate was 21 percentage points. Similar changes were observed for knowledge of at least one STI protection measure (DiD estimate 21 percentage points).

In the HERhealth and comparison factories, a greater proportion of women correctly named at least one STI symptom in women and at least one STI symptom in men at endline compared to baseline. The increases were significantly greater in the HERhealth factories: DiD estimate was 13 percentage points for STI symptoms in women and 24 percentage points for STI symptoms in men. Despite these gains, less than half of the women in the HERhealth factories could name at least one STI symptom in women (49%) and in men (44%) at endline.

Difference-in-differences of FP and menstrual hygiene behaviours between HERhealth and comparison factories

DiD estimates for the three behaviours are presented in Table 3. The average changes over

Table 1. Background characteristics by group and survey				
	Baseline		Endline	
	HERhealth (n = 845)	Comparison (n = 859)	HERhealth (n = 718)	Comparison (n = 785)
Age	**		**	
18–19	10.9	20.4	11.2	20.0
20–24	39.5	37.8	38.6	35.7
25–29	31.9	21.4	29.5	21.7
30–34	11.4	10.4	13.9	10.6
35–39	5.0	7.0	5.7	7.6
40–49	1.3	3.0	1.1	4.4
Literacy	**		*	
Can't read or write	12.9	19.5	16.6	22.2
Can read or write	4.5	3.1	11.0	9.0
Can read and write	82.6	77.4	72.4	68.8
Marital status	**		*	
Never married	16.3	30.8	18.4	23.3
Married	74.6	61.4	74.2	68.7
Separated/divorced/widowed	9.1	7.8	7.4	8.0
Number of living children	**		**	
None	41.1	49.4	39.4	43.5
1	34.1	26.4	35.5	30.8
2	19.4	14.7	21.2	14.9
3+	5.4	9.5	3.9	10.8
Wealth quintile	**		**	
Lowest quintile	16.7	27.5	15.6	22.4
Lower quintile	18.8	26.6	17.8	23.2
Middle quintile	16.6	21.1	18.1	19.7
Higher quintile	27.2	17	24.0	18.5
Highest quintile	20.7	7.8	24.5	16.2
Length of time since migrating for work	**		**	
Less than 1 year	28.5	32.3	26.7	33.6
At least 1 year and less than 4 years	18.8	32	21.0	22.2
At least 4 years and less than 6 years	8.3	8.5	7.4	11.2
6 or more years	44.4	27.2	44.9	33
Position in the factory	**		**	
Helper	18.6	30	20.6	31.6
Operator	60.7	59.5	66.1	48.5
Quality control/supervisor	11.4	4.7	8.4	11.2
Other	9.3	5.8	4.9	8.7

(Continued)

Table 1. Continued

Who makes your health decisions	**		**	
	Respondent	26.3	22.8	19.8
Respondent + partner/ parents	45.6	55.2	64.1	53.9
Partner/parents/elders/in-laws	27.1	22.0	16.1	19.6

p*-value ≤ 0.05; *p*-value ≤ 0.01.

time were significantly different between the HERhealth and comparison factories. Asked only of ever married women (HERhealth factories: baseline $n = 706$ and endline $n = 638$; comparison factories baseline $n = 594$, and endline $n = 602$), the use of any FP method increased from baseline to endline in the HERhealth factories (65% to 73% respectively) but decreased in comparison factories (70% at baseline to 66% at endline). The DiD estimate for use of any FP method was 12 percentage points. Similarly, the use of any modern method increased in the HERhealth factories (59% to 66%) but decreased in the comparison factories (62% to 58%). The DiD estimate for use of any modern method was also 12 percentage points. All women interviewed were asked about menstrual hygiene practices. A significant increase in the proportion of women who reported using a sanitary product for menstrual management was observed from baseline to endline in both groups, but the increase was 35 percentage points greater in the HERhealth factories.

Discussion

The purpose of this study was to evaluate the effect of the HERhealth model on female factory workers' SRH knowledge, and FP and menstrual hygiene behaviours in Bangladesh. Results showed that gains in knowledge, use of FP and use of menstrual hygiene products were more likely to occur among female factory workers in the HERhealth factories. This suggests that the HERhealth model of using PHEs, who are also factory employees, to disseminate health messages with colleagues at work can influence knowledge. For menstrual hygiene behaviours, management in HERhealth factories worked with onsite clinics to ensure the availability of menstrual hygiene products, suggesting that changes in behavioural outcomes were observed when coupled with activities that increased the capacity of factory

clinics. As distance to health clinics and short breaks from work have been documented as barriers for female workers in accessing health services,^{13,15} expanding the range of SRH/FP information and services available at factories could be a promising practice to ensure women workers have the necessary access to SRH services, while also taking part in the workforce. By facilitating access to SRH/FP information and services, workplace health programmes, such as HERhealth, therefore have the potential to help fulfil workers' right to SRH/FP information and services.

Many women in this study were under the age of 25 and migrated to the city for work, similar to RMG workers interviewed in previous studies.^{2,14} While results showed that the HERhealth model had a positive effect on all five SRH knowledge outcomes, fewer than 50% of women interviewed had correct knowledge for three indicators: time for the greatest risk of pregnancy; at least one STI symptom in women; and at least one STI symptom in men. PHEs mainly distributed health messages during work breaks, which may not have allowed for sufficient time to cover certain topics in detail. While PHEs spent approximately three months to cover one topic, these messages may not have been reaching the same workers repeatedly given the size and number of workers in each factory. This suggests that expanding content on women's health and/or increasing the frequency of messages may further increase knowledge and should be explored. Similar workplace health programmes could also explore providing PHEs with visual job aids and/or informational pamphlets related to the health topics covered when discussing health topics with their co-workers.

The HERhealth model had the greatest effect on women's use of sanitary menstrual hygiene products. Few women, irrespective of group, reported using sanitary products at baseline, similar to previously documented results.¹⁴ While there was also an increase in women's use of

Table 2. Difference-in-differences estimations for knowledge outcomes*			
Group	Per cent		Percentage point estimate
	Baseline	Endline	DiD results
Identified 10–20 days after menstruation as the risk period for pregnancy			
HERhealth	26.5	40.9	11.7**
Comparison	27.8	30.6	
Named at least 1 HIV prevention measure			
HERhealth	73.5	82.7	21.3**
Comparison	61.7	49.7	
Named at least 1 STI prevention measure			
HERhealth	37.6	57.5	21.0**
Comparison	24.4	23.3	
Named at least 1 STI symptom in women			
HERhealth	27.5	49.0	13.2**
Comparison	9.6	18.5	
Named at least 1 STI symptom in men			
HERhealth	13.1	44.2	23.9**
Comparison	6.2	11.1	

*Sample size: Baseline: Intervention $n = 845$, Comparison $n = 859$; Endline: Intervention $n = 718$, Comparison $n = 785$.
** p -value ≤ 0.01 .

sanitary products in comparison factories, the increase was 36 percentage points more in the HERhealth factories. One explanation is that the PHE approach was coupled with expanded access to sanitary products in HERhealth factory clinics. Women were therefore able to translate the knowledge received about menstrual management into behaviour change as pads and tampons were readily available in their factories. This suggests that educational activities should be delivered alongside interventions that expand access to health services, when possible.

The HERhealth model also had a positive effect on workers' use of FP methods consistent with previously documented findings¹⁴ even though the HERhealth factories did not provide FP commodities. While the HERhealth model included

Table 3. Difference-in-differences estimations for behaviour outcomes ⁺			
Group	Per cent		Percentage point estimate
	Baseline	Endline	DiD results
Current use of any family planning method⁺⁺			
HERhealth	65.1	72.9	11.9**
Comparison	70.4	66.3	
Current use of any modern family planning method⁺⁺			
HERhealth	58.6	66.4	11.5**
Comparison	61.8	58.1	
Uses sanitary products for menstrual management (pad or tampon)			
HERhealth	23.2	71.7	35.4**
Comparison	15.3	28.4	

⁺Sample size: Baseline: Intervention $n = 845$, Comparison $n = 859$; Endline: Intervention $n = 718$, Comparison $n = 785$.
⁺⁺Sample ever married women only: Intervention $n = 707$, Comparison $n = 594$; Endline: Intervention $n = 586$, Comparison $n = 602$.
** p -value ≤ 0.01 .

efforts to expand access to FP in factory infirmaries, many factory managers were reluctant to bring in FP methods. Given the promising results observed with the use of menstrual hygiene products, workplace health programmes should continue to advocate with factory management to offer FP methods. This could have the potential to allow women workers to choose more easily if and when they wish to have children.

Limitations

There are two main limitations to this study. First, the data collected were cross-sectional which means that we were not able to measure changes in knowledge and behaviours at the individual level. We applied a cross-sectional design due to logistical constraints in contacting the same workers for a follow-up interview two years apart, which would have reduced the sample size at endline through losses to follow-up. Significant differences in respondent characteristics within samples from

baseline to endline were observed for about half of the characteristics reported. The differences observed within the HERhealth sample, however, are in the opposite direction we would expect to be associated with the results. For example, fewer women in the HERhealth factories could read and write at endline compared to baseline, yet women had higher knowledge at endline compared to baseline. This may be because the HERhealth model disseminated health messages verbally through PHE.

Second, there were statistical differences in respondent characteristics between women in the HERhealth and comparison samples. For example, a higher proportion of women were in the lower wealth quintile in the comparison sample compared to the HERhealth sample, which may have influenced their ability to purchase hygiene products or FP methods. While we cannot claim that the HERhealth model had a causal impact on workers' knowledge and behaviour, we believe that the consistency of the results from the DiD analysis on balanced samples suggests that the HERhealth model did have an effect on worker knowledge and behaviours.

Conclusion

Garment factory workers often have limited access to SRH information and services. Workplace programmes have the potential to improve millions of women workers' access to these services, especially when factory infirmaries offer SRH services and commodities directly to workers. HERhealth is one example of a successful collaboration between corporations and NGOs to implement workplace health programmes and ensure the rights that all women have equal access to SRH information and services.

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Bangladesh Medical Research Council (BMRC) (Protocol BMRC/NREC/2013-16/643). All methods were performed in accordance with the relevant guidelines and regulations stated in the approved protocol. Informed consent was received from all study participants before the start of the interview.

Disclosure statement

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Data availability statement

The dataset analysed during the current study will be available at the USAID Development Data Library in 2021, <https://www.usaid.gov/data>. They will also be available from the corresponding author on reasonable request.

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Appendix

Number of female workers and PHEs by study factory		
Factory ID	Number of female worker	Number of PHEs trained
HERHealth1	1700	80
HERHealth2	1600	70
HERHealth3	800	30
HERHealth4	600	24
Total	4700	204
Comparison1	2300	NA
Comparison2	1600	NA
Comparison3	1000	NA
Comparison4	700	NA
Total	5600	NA

Résumé

La croissance rapide du secteur du prêt-à-porter au Bangladesh a transformé l'économie du pays tout en employant aussi une main-d'œuvre majoritairement féminine. Les entreprises ont commencé à collaborer avec les ONG pour diffuser des messages de santé et élargir les services de santé offerts à leurs employés. Cette étude évalue l'effet de l'approche du modèle de santé HER (de l'anglais *Health Enables Return*, la santé est rentable) qui consiste à demander à des pairs de dispenser une éducation à la santé afin de transmettre des messages de santé et d'élargir la disponibilité de produits sanitaires. Au moyen de données transversales fournies à plusieurs reprises par des employées des fabriques du modèle HER et d'autres entreprises témoins, les échantillons du début et de la fin de l'étude ont été comparés pour huit caractéristiques, puis des estimations des doubles différences ont servi à déterminer l'effet du modèle HER sur les connaissances et les comportements. Les changements moyens au fil du temps dans les connaissances

Resumen

El rápido crecimiento del sector de la confección de prendas de vestir en Bangladés ha transformado la economía del país a la vez que emplea una fuerza laboral predominantemente femenina. Las empresas han empezado a colaborar con ONG para transmitir mensajes de salud a las trabajadoras y ampliar los servicios de salud a su disposición. Este estudio evalúa el efecto del enfoque del modelo sanitario Salud Permite Retorno (o HER, por las siglas en inglés de *Health Enables Return*) de utilizar educadores de pares sanitarios para transmitir mensajes de salud y ampliar la disponibilidad de los productos de salud. Utilizando datos transversales repetidos de trabajadoras en fábricas de HERsalud y de comparación, se emparejaron las muestras iniciales y finales según 8 características y luego se utilizaron estimaciones de diferencias en diferencias para determinar el efecto del modelo HERsalud en los conocimientos y comportamientos. Los cambios promedio en conocimientos y comportamientos a lo

et les comportements étaient statistiquement différents entre les fabriques du modèle HER et les autres entreprises témoins. La connaissance du moment où une femme court le plus de risque de tomber enceinte pendant son cycle menstruel a augmenté entre le début et la fin de l'étude pour les deux groupes, mais était de 12 points de pourcentage supérieure dans les fabriques du modèle HER que dans les autres. Une hausse de l'emploi de la planification familiale parmi les femmes mariées a été observée dans les fabriques du modèle HER, mais a diminué dans les entreprises témoins, aboutissant à une différence des différences de 12 points de pourcentage. L'effet le plus net du modèle HER a été observé sur l'utilisation par les femmes de produits sanitaires pour la prise en charge des menstruations, qui a sensiblement augmenté dans les deux groupes; néanmoins, la hausse était de 35% plus importante dans les fabriques du modèle HER. Le modèle de santé HER est efficace pour élargir les connaissances et améliorer les comportements de santé quand les produits sanitaires sont disponibles dans les infirmeries des entreprises.

largo del tiempo eran estadísticamente diferentes entre las fábricas de HERsalud y las de comparación. El conocimiento de cuándo una mujer corre mayor riesgo de quedar embarazada durante su ciclo menstrual aumentó desde la línea base hasta la línea final en ambos grupos, pero fue de 12 puntos porcentuales mayor en las fábricas de HERsalud que en las de comparación. En las fábricas de HERsalud se observó un aumento en el uso de planificación familiar entre mujeres alguna vez casadas pero una disminución en las fábricas de comparación, lo cual causó una diferencia en diferencias de 12 puntos porcentuales. El mayor efecto del modelo HERsalud se observó con relación al uso de productos sanitarios para el manejo menstrual, que aumentó significativamente en ambos grupos, pero el aumento fue 35% mayor en las fábricas de HERsalud. El modelo HERsalud es eficaz para incrementar los conocimientos y mejorar los comportamientos de salud cuando hay productos de salud disponibles en las enfermerías de las fábricas.