

COST-BENEFIT ANALYSIS OF MENSTRUAL HYGIENE MANAGEMENT IN THE WORKPLACE

ACTIVITY OVERVIEW

All over the world, people who menstruate experience challenges managing their periods, especially those who live and work in environments that do not support adequate menstrual hygiene management (MHM). MHM is part of USAID’s holistic approach to menstrual health and hygiene (MHH), which includes reproductive health; water, sanitation and hygiene; education; and social and behavior change. For working women, these challenges may have critical implications for their health and general wellbeing, as well as for their economic outcomes such as work attendance, performance, and earnings. To better understand the relationship between MHM and women’s economic empowerment, the USAID Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project conducted action research to assess the benefits and costs of improved MHM in the workplace for women workers and the enterprises that employ them. The overall objective was to determine if providing adequate MHH in the workplace contributes to improved business and social outcomes, including women’s economic empowerment. An overview of the activity is available [here](#).



The activity conducted a cost-benefit analysis (CBA) at two factories each in Kenya and Nepal, referred to throughout this brief as Kenya Workplace A and B, and Nepal Workplace A and B. CBA, broadly defined, is a methodology for weighing the economic costs of implementing a project or policy against the economic benefits gained from that project or policy to assess the overall societal impact. Total benefits and total costs are compared to create a benefit-to-cost ratio (BCR). We collected two main categories of variables: 1) market variables, valued by market prices (such as the cost of one day’s labor); and 2) non-market variables, valued by individuals’ willingness to pay (used for variables such as increased comfort at the workplace).

On average, the benefits of implementing the program outweighed the costs: every \$1 invested returned \$1.40 in benefits. If costs and benefits are projected over 24 months, every \$1 invested returns \$2.19 in benefits.

KEY FINDINGS



The program broke even at 3 out of 4 workplaces over the course of a 10-month intervention. Projected to two years, the program breaks even at all workplaces.



Provision of menstrual materials and changes to workplace culture¹ appear to be a major driver of benefits: when comparing workplaces that invested heavily in infrastructure to those that did not, benefits were comparable.



Women valued the intervention very highly. In our study, the average willingness to pay for an improved environment for MHH was roughly equivalent to 5% of women’s total monthly salaries.

This CBA is among the first to examine improved MHH in the workplace. These early findings suggest that investment in workplace MHH programs is a net positive benefit to society with specific benefits to both women and the private sector.



¹ Workplace culture encompasses the values, beliefs, and attitudes of an institution, which provide the setting for its norms of behavior and practice. The *MHM in the Workplace* action research promoted a workplace culture that supports menstruation and women’s ability to manage their periods.

COST-BENEFIT ANALYSIS METHODS

The market variables included in the CBA were absences from work due to menstruation, and healthcare costs incurred from seeking care for menstruation-related complications. Non-market variables were estimated using a willingness-to-pay (WTP) questionnaire, in which women were asked to choose between two fictional job descriptions at two nearly identical factories. One hypothetical workplace offered benefits like those provided in the activity – free menstrual materials, clean and updated latrines, and education and sensitization sessions for staff; the other did not. The workplace with an improved environment for MHH paid a lower salary than the workplace which did not. By varying this proposed salary, we established an average WTP for an improved MHH environment.

The WTP questionnaire was delivered at all four factories as well as at a fifth site in Tanzania. We collected data at the site in Tanzania, where no intervention took place, in order to examine whether women’s valuation of an MHH program differed between those who had experienced the benefits of the intervention (whose valuation would be different than those who had not experienced an improved environment for MHH) and those who did not. Data were compared across the five sites to determine an average valuation. We called this benefit “women’s economic benefits,” as it encompasses women’s valuation of the tangible (e.g., free access to different menstrual materials) and intangible (e.g., decreased stigma at work) aspects of the intervention.

COSTS

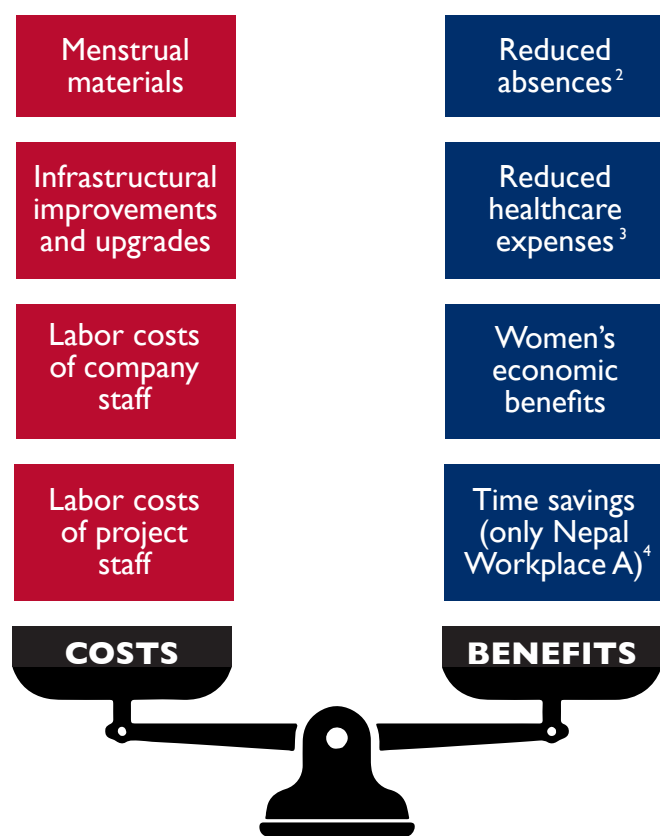
The total costs of the workplace MHH program in Kenya were \$5,055 at Workplace A (which had 80 employees) and \$12,629 at Workplace B (which had 250 employees). Over the course of the intervention periods, the respective costs per woman employee were \$62 and \$51. The total costs of the workplace MHH program in Nepal were \$9,025 at Workplace A and \$2,827 at Workplace B, with the large discrepancy in costs a result of Workplace A constructing a new latrine. Over the course of the intervention periods, the respective costs per woman employee were \$201 and \$60 respectively.

The major discrepancy in intervention costs in the Nepal workplaces came from infrastructure improvements. Nepal Workplace A built and renovated women’s latrines – infrastructural costs totaled \$6,271 – while at Workplace B, infrastructural improvements were not started until November of 2021. Because the upgrades in Workplace B had no impact on the period in which we collected data, those costs were not included in the total costs of the intervention.

BENEFITS

In Kenya, the total benefits of the intervention were \$7,886 at Kenya Workplace A and \$27,944 at Kenya Workplace B. In Nepal, despite dramatically different program costs, the total benefits were relatively similar between the two factories: \$8,298 at Nepal Workplace A and \$7,735 at Nepal Workplace B.

The major difference in benefits between the two countries was in the reduction of menstruation-related healthcare expenses borne by women in Nepal, which comprised 42% of total benefits at Workplace A and 44% of benefits at Workplace B. At Nepal Workplaces A and B respectively, total costs savings per woman per month between the beginning and end of the intervention were equivalent to \$7.15 and \$7.63.



2 We considered that reduced absences may also impact women’s economic benefits, but for this analysis, we assumed that company owners reaped most of these benefits due to increased production efficiency and the higher returns to capital than labor in capital constrained markets like in Kenya.

3 Healthcare expenses included costs like fees for medical consultation and costs of medicine to treat infection.

4 At Nepal Workplace A, workers live on site and would typically return to their residence to change menstrual materials because the latrines within the workplace were unsuitable. After construction of a new latrine close to the factory floor, women were able to save the total walking time of ~10 minutes each way. We valued the time savings per woman at 90 minutes (30 minutes a day over 3 days).

DETAILED BENEFITS AND COSTS

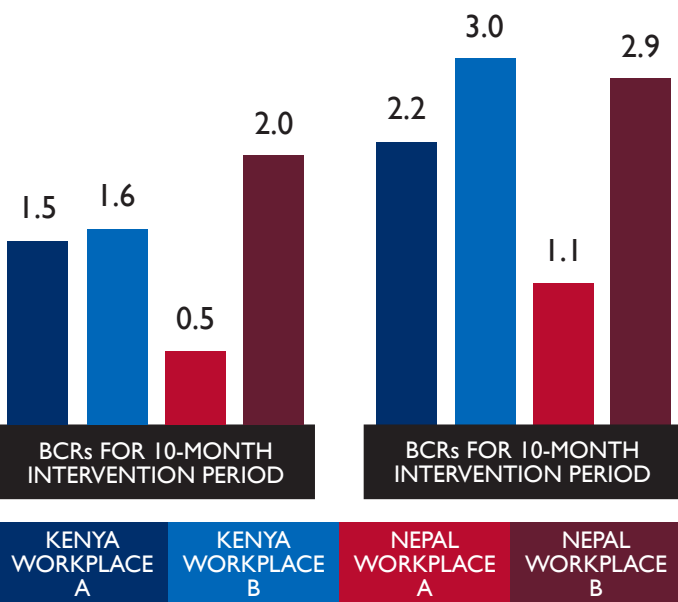
	WORKPLACE <i>(average # of female employees)</i>	BENEFITS				COSTS			
		BENEFIT VALUE (\$USD)	REDUCED ABSENCES (%)	SAVINGS FROM REDUCED HEALTH CARE COSTS (%)	WOMEN'S ECONOMIC BENEFITS (%)	VALUE (\$USD)	MATERIALS (%)	INFRA-STRUCTURE (%)	LABOR (%)
10 MONTHS	Kenya Workplace A (81)	7,886	11	7	82	5,055	44	29	27
	Kenya Workplace B (250)	27,944	2	26	71	12,629	84	1	15
	Nepal Workplace A (47) ⁵	8,298	11	42	43	9,025	25	69	6
	Nepal Workplace B (45)	9,875	8	44	49	2,827	82	-	18
24 MONTHS	Kenya Workplace A (81)	18,375	11	7	82	7,768	42	35	23
	Kenya Workplace B (250)	65,225	2	26	71	16,025	86	1	13
	Nepal Workplace A (47) ⁵	19,334	11	42	43	9,888	30	64	6
	Nepal Workplace B (45)	22,968	8	44	49	4,452	87	-	13

BENEFIT-TO-COST RATIOS (BCRs)

We calculated three BCRs: 1) a base-case scenario, which includes women’s economic benefits and reduced absences in the benefits calculation; 2) an optimistic scenario, which includes women’s economic benefits, reduced absences, and savings from reduced healthcare costs; and 3) a conservative scenario, which includes as benefits only reduced absences and savings from reduced healthcare costs. We excluded women’s savings from reduced healthcare costs in the base-case because women’s economic benefits, derived from the WTP survey, theoretically encompass women’s expected reduction in healthcare costs and would therefore be double-counted. However, because our WTP survey did not mention health benefits and because we are unsure whether respondents factored in expenses to their answers, we calculated an “optimistic” scenario which includes both.

BASE CASE SCENARIO	OPTIMISTIC SCENARIO	CONSERVATIVE SCENARIO
Reduced Absences + Women’s Economic Benefits / Total Costs	Reduced Absences + Women’s Economic Benefits + Reduced Healthcare Expenses / Total Costs	Reduced Absences + Reduced Healthcare Expenses / Total Costs

The graphs below show the base-case scenarios for the 10-month intervention and a 24-month projection. We projected costs and benefits to a 24-month period because a significant portion of costs (e.g., menstrual cups, latrine improvements) are up-front fixed costs, while benefits accrue continuously.



KEY TAKEAWAYS

In the base-case scenario, 3 out of 4 workplaces break even after 10 months and all four break even for the 24-month projection.

For the 10-month intervention, the average BCR in the optimistic scenario was 2.05 (ranging from 0.92 - 3.49), while the average BCR in the conservative scenario was 0.81 (ranging from 0.28 - 1.80). Projected to 24 months, the average BCR in the optimistic scenario was 3.39 (ranging from 1.96 - 4.07), while the average BCR in the conservative scenario was 1.33 (ranging from 0.42 - 2.65).

A major driver in each BCR was infrastructure upgrades, which ranged from \$0 at Nepal Workplace B to \$6,271 at Nepal Workplace A.

⁵ Time savings constituted 4% of benefits at Nepal Workplace A in both 10-month and 24-month intervention periods.

KEY LEARNING POINTS

1 DECREASED WORK ABSENCES AND MENSTRUATION-RELATED HEALTHCARE COSTS ARE AN IMPORTANT BENEFIT OF MHH INTERVENTIONS FOR WOMEN AND FACTORIES

Absences from work due to menstruation are of increasing policy and practice interest in the low-resource settings, but they remain poorly quantified. We found that over the course of a 10-month intervention, the average time absent from work for women employees was reduced by ~1.5 hours per month. When the increase in time at work is valued based on wages, the reduction in absences due to menstruation comprised on average 6% of total benefits in Kenyan factories and 9% of total benefits in Nepal factories. Reduction in absences benefit both women (through increased wages) and factories (through increased productivity).

Savings from reduced healthcare expenses represented an even larger proportion of benefits. The average amount spent in Kenya decreased from ~\$2 per woman per month to \$0.18 per woman per month, while in Nepal the reduction was from ~\$12 per woman per month to \$4.60 per woman per month. Reductions in healthcare-related expenses equaled 17% of benefits in Kenyan factories and 43% of benefits in Nepal factories. Although these are self-reported figures and are averages across the company workforce, they nonetheless suggest that menstruation-related healthcare expenses represent both a substantial expenditure for women in factory settings as well as a major potential benefit of MHH interventions.

RECOMMENDATION:

Private enterprises and efforts to improve women's welfare should provide MHH materials, facilities, and training

2 MENSTRUAL MATERIALS AND CHANGES TO WORKPLACE CULTURE APPEAR TO BE STRONG DRIVERS OF BENEFITS

At Workplace B in Nepal, proposed improvements to the latrines were not completed until the end of the project in October of 2021. As a result, we were able to compare the benefits at Workplace A, which made substantial improvements to infrastructure, including building a new latrine, and Workplace B, which only provided menstrual materials during the intervention period. The benefits between the two factories were similar, with moderate reductions in absences equal to \$934 (11% of total benefits) at Nepal Workplace A and \$764 (8% of total benefits) at Nepal Workplace B, and substantial reductions in healthcare related expenses, equivalent to \$3,449 at Workplace A (42% of total benefits) and \$4,311 (44% of total benefits) at Workplace B.

While it is not possible to conclusively state whether any components of the intervention in isolation were more responsible for reducing absences and healthcare costs, these data suggest that menstrual materials alone have a substantial impact on women's absences from work and on menstruation-related healthcare expenditures. These results suggest that future interventions, if unable to scale infrastructure improvements, may still benefit markedly from the provision of menstrual materials.

RECOMMENDATION:

Future iterations of the workplace MHH intervention should endeavor to include a CBA exercise that would permit delineation of which MHH improvements have the most impact and are the most cost effective, allowing evidence-based investing by resource-constrained workplaces who are not able to implement all three components

3 WILLINGNESS TO PAY METHODOLOGIES REQUIRE FURTHER RESEARCH FOR APPLICABILITY TO MHH

Due to time and resource constraints, we were unable to conduct thorough pilot testing of the WTP data collection survey.⁶ We used an initial round of three cognitive interviews with women employed at a company in Morogoro, Tanzania, as well as the first day of data collection at the Tanzania company, to ensure that the questions were properly interpreted. However, we expect the survey would have benefitted from testing different job scenarios and different ways of presenting salaries.

WTP data collection across factories presented several difficulties. We found considerable acquiescence bias, also known as "yea-saying," in which respondents accepted any salary difference used in the survey, despite the difference approaching a substantial portion of their current wages. Most survey respondents likely answered strategically, rather than truthfully. Respondents worried, for example, if responses would be shared with management and used as a loyalty test. Other respondents may have believed that their answers could lead to future interventions providing free goods or services, which biased their answers in favor of a more highly valued intervention. It is also possible that the precarity of employment stemming from the COVID-19 pandemic further biased participants to answer in favor of the intervention.

The recommendation for this learning point is available on the following page.

⁶ The use of willingness to pay methodologies in benefit-cost analysis is a subject of debate. We chose to include this methodology because of its unique ability to value important intangible benefits of this intervention, such as decreased psychosocial stress for women. For an overview of willingness to pay, see Carson, R. T., Flores, N. E., & Meade, N. F. (2001). *Contingent Valuation: Controversies and Evidence. Environmental and Resource Economics, 19(2), 173–210.*

RECOMMENDATION:

WTP methodology represents an opportunity to obtain valuable information on how employees value improved MHH environments. Future research may benefit from the following recommendations:

- 1 **More extensive pilot testing of the survey.** In particular, it would be helpful to explore how the payment vehicle presented in the questionnaire influences responses. Our survey presented two different job offers with two different salaries, but framing the job offer at the company without an MHH intervention as a raise from a woman’s current salary may elicit a different range of responses. A further area of inquiry is whether assumptions about rational choice and employment hold true in developing settings where a majority of respondents may have few opportunities for formal employment.
- 2 **Integrating WTP questions into a household survey.** Conducting all surveys at respondents’ actual place of employment may have biased respondents’ answers in favor of high values for an MHH-related intervention. We suggest integrating WTP for MHH questions into household-level surveys in which MHH is not the explicit focus, in order to obtain a broader range of values.
- 3 **Conducting separate surveys to assess valuation of different intervention components.** In the fictional job scenario of the intervention, we described a workplace which provides menstrual products, maintains clean and well-equipped latrines and washrooms, and has run sessions focused on improving company culture regarding MHH. As a result, respondents’ valuations theoretically encompass all components of the intervention. Future research might explore the value of each individually.

4 INTANGIBLE BENEFITS TO BUSINESSES REMAIN UNEXPLORED

One important variable that remained unexplored in our research was the impact of an improved environment for MHH on corporate reputation. We planned to assess this variable using a WTP survey among corporate stakeholders at the country end-of-project dissemination events but were unable to do so due to time constraints. Although unresearched, we expect that workplace MHH changes may result in considerable improvements to corporate reputation. These in turn might influence workplace profitability through, for example, an increased ability to attract and retain skilled employees, an increase in corporate visibility from buyers interested in investment in workplaces with strong corporate social responsibility and employee wellness programming, and more favorable attitudes from consumers interested in the same.

RECOMMENDATION:

Future research might examine the value that businesses place on being considered an “MHH-friendly workplace”; consumer perceptions of companies implementing MHH programs; or how prospective employees perceive job options which include an improved environment for MHH.

5 CALCULATING RETURN-ON-INVESTMENT FOR FACTORIES WILL BE IMPORTANT FOR MAKING A STRONGER BUSINESS CASE FOR IMPROVED MHH

In our initial plan, we expected to conduct a return-on-investment (ROI) analysis to examine whether the benefits accruing directly to the company (rather than to women or to society) would outweigh the costs. Because of the inadequacy or unavailability of data, we were unable to determine the extent to which the intervention improved the company’s bottom line. Given the positive results of the activity, we expect there to be greater interest in replicating workplace MHH interventions in different contexts.

RECOMMENDATION:

To determine an accurate ROI, future collaborations with employers should go much deeper to understand the availability of metrics on workplace productivity, efficiency, and profits. We anticipate that the theoretical improvements on workplace productivity will be small, which would require more detailed data on individual worker output over a longer period.



6 SMALL ENTERPRISES MAY HAVE INADEQUATE DATA COLLECTION FOR NUANCED ANALYSIS

We conducted several trips to the factories in Kenya and virtual meetings with company leadership in Nepal to collect data for the CBA. We requested data on employee numbers, wages, absences, turnover, fringe benefits, and sales. Across all factories, we were unable to collect sufficient information that would enable detailed analysis of productivity gains or returns on investment for the project. In some cases, data were unavailable in a usable format (e.g., absences were not sex-disaggregated; turnover and hiring records were inconsistent), or the requested records were not available over a sufficiently long time period. In other cases, the factories were unwilling to provide more sensitive business information, such as sales records. This was particularly the case in Nepal, where a relationship between Factories A and B (Workplace A uses Workplace B as a sub-contractor) created a potential conflict of interest in sharing information. The pandemic-related disruptions to business operations and sales also necessitated comparing 2021 records to 2019 records (as 2020 production was halted at points). These records were either unavailable, or factories were unwilling to share, which diminished our ability to compare across time periods.

RECOMMENDATION:

We recommend that future CBAs in the workplace MHH sector more extensively vet the availability of data and in what form data are stored prior to finalizing formal partnership agreements. For a more detailed analysis, it may be necessary to partner with a large, multi-national company with highly organized and preferably digitized data collection and management. While this may lead to other complications, such as more onerous procedures to protect confidentiality or a need for larger samples, it would greatly improve the sensitivity to detect changes in productivity stemming from improved MHH.

7 SURVEY TIMING AND SCOPE CAN IMPROVE MEASUREMENT ACCURACY

We faced two major challenges in data collection: working within COVID-19 restrictions (which were different for each worksite and subject to changes in national policies), and, relatedly, working in a private sector factory setting. Partnering with the private sector requires great attention to minimizing the impact on workplace operations, which was even more challenging while adhering to COVID-19 safety protocols. As a result, our data collection was restricted to only two time points (a baseline and endline survey), and the endline survey was substantially curtailed to minimize the time required for enumerators to deliver it. Because the baseline data for key employee performance variables was not collected prior to the intervention, but rather through recall during and—in some cases—at the end of the intervention, there was limited opportunity to adjust data collection and estimation methods. Our baseline survey was also delivered after the intervention had begun, which is a potential source of bias, as is the fact that baseline had to be delivered via Zoom in Nepal.

RECOMMENDATION:

Ideally, future analyses would use shorter recall periods, with repeated measures, for key variables such as absences due to menstruation or monthly expenditures on menstruation related health care. These could also be cross validated with data collected by the workplace.

8 MEN'S PERSPECTIVES ARE OFTEN MISSING

We incorporated men's perspectives in focus group discussions (FGDs) at both Nepal and Kenya workplaces, in a quantitative survey delivered to a small sample of men in Kenya, and in the WTP survey in Kenya and in Tanzania. However, we were unable to sample a sufficient number of men in our large WTP survey in Tanzania (less than 5% of respondents in a convenience sample) to determine whether men valued the intervention differently than women. As a result, we did not incorporate economic benefits for men in our CBA. Among the men we were able to sample, we found men do place a value on improved MHH – particularly those who have family employed at the same company – but the data remains sparse.

RECOMMENDATION:

Future interventions should endeavor to sample men and women proportionally and to design survey instruments in early stages to ensure their perspectives are captured.