SHF

The Sanitation & Hygiene Fund

Impact of Investment in Menstrual Health and Hygiene (MHH) on Socio-Economic Well-Being

Technical Note

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India, 2010. ©Gurmeet Sapal

About the Sanitation and Hygiene Fund

The Sanitation and Hygiene Fund (SHF) is a UN fund dedicated to achieving universal access to sanitation, hygiene and menstrual health through market-based approaches. SHF works with Low- and Middle-Income Countries (LMICs) to build robust sanitation economies and menstrual hygiene marketplaces. For more information, please visit: www.shfund.org

About The Study

This study, commissioned by the SHF to identify promising examples from research and practice on potential socio-economic returns from investing in MHH, was conducted by Population Services International (PSI)-Europe. We thank the authors **Maria Carmen Punzi** (expert in the field of MHH) and **Dr. Lidwien Sol** (expert in cost-benefit analyses and MHH), both independent consultants. We also thank Odette Hekster of PSI-Europe and Dr. Claire Rothschild of PSI for their contributions.

This technical note accompanies the MHH Returns on Investment (ROI) in MHH data in the study and the Cost Database, and is written by Dr. Lidwien Sol.

Note on terminology**:** This report refers to women and girls' experience with menstruation, but recognises that not all those who menstruate identify as women or girls, and that not all women and girls menstruate. People who menstruate include those who have MHH needs: girls, women, transgender, non-binary and intersex persons.

Note on research: The ROIs presented in this study are based on available evidence, in this case three studies. Due to this limited available evidence, these findings aim to inform about specific cases and settings, not to generalise. The findings are a first step in the direction of developing general MHH ROIs. For further details, please see the section on limitations.

Notes on the Data Sources

Note on the Babagoli et al. Paper: Cost-effectiveness and cost-benefit analyses of providing menstrual cups and sanitary pads to schoolgirls in rural Kenya (Babagoli et al., 2022)

In regard to the study conducted by Babagoli et al. in 2022, several points concerning its rigour warrant consideration:

- **The Cost-Benefit Estimates:** The study lacked a true control group for comparison. Notably, the interventions studied—provision of menstrual materials—were not implemented in isolation but were accompanied by menstrual hygiene education interventions. The cost-benefit estimates show additional benefits realized by adding a menstrual material component to an existing menstrual hygiene education intervention. Therefore, these are not cost-benefits estimates of running a menstrual material intervention in isolation (i.e. without a MH educational component).

- **Benefit Data:** The data in this study only reported on the additional benefit of adding a menstrual material component to the existing MHH education component. As a result, the Babagoli et al. study's cost-benefit estimates and the current study's ROI estimates reflect the projections of adding a menstrual material component to a MHH educational intervention. These figures do not reflect the projections of exclusively implementing a menstrual material intervention.

- **Insignificant Results:** The study's outcomes predominantly yielded insignificant findings to provide a definitive conclusion that menstrual cups and sanitary pads have cost-effective benefits on health and education.

Notes on USAID Learning Brief: Cost-benefit analysis of menstrual hygiene management in the workplace (USAID, 2022)

- **The learning brief presents 10-month results and 24-month results.** In this study, the researchers opted to only utilize the 24-month data as it better captures the long-term outcomes stemming from investments in MHH. In this research, the 24-month estimates were used as they best represent the long term results to be expected from investments in MHH. Consequently, all estimates and calculations in the database are based on the 24-month estimates.

- **Estimating women's economic benefits by using the Willingness to Pay (WTP) method.** The authors have clearly indicated the shortcomings of using the WTP method. This method tries to elicit how much a programme beneficiary would be willing to pay for the programme if they had to cover the cost themselves. Given that this is a hypothetical query, it is challenging to provide an accurate answer. Furthermore, if one believes this measurement to be accurate, it should inherently encompass other benefit categories too (such as reduced healthcare costs and decreased absences). Consequently, a straightforward summation of the three benefit categories might lead to overlapping effects. Please refer to the Sensitivity Analysis notes below, for a deeper exploration of this matter.

Notes on the Sol et al. Paper: Breaking down menstrual barriers in Bangladesh; Cluster RCT evidence on school attendance and psychosocial outcomes of adolescent girls (Sol et al. 2021)

Disclaimer: The co-author of these evidence briefs and the cost-benefit database is also the lead author of the Sol et al. (2021) paper. This author (Dr. Lidwien Sol) explicitly asserts their commitment to upholding the utmost standards of objectivity and impartiality throughout the entirety of the research process as well as in the presentation of the research findings.

Additional Explanations for the MHH ROI and Cost Evidence Base

Sheet 1

Sheet 1 provides an overview of Return on Investment (ROI) estimates from the three main studies, which are the basis for the evidence briefs.

ROI Sensitivity Analysis

In the case of the USAID study (2022), their sensitivity analysis is included and presented without applying our statistical adjustment (+15%). USAID's analysis divides benefits into three categories: conservative, standard, and optimistic estimates. These categories are explained in Sheet 2 (CB Background Calculation, columns E-M, rows 6-22). Their approach is as follows:

- Conservative estimate: reduced absence and reduction in healthcare costs, divided by total costs
- Standard: reduced absences and women's economic benefits, divided by total costs
- Optimistic: reduced absences, reduction in healthcare costs and women's economic benefits; divided by the total costs

For the Babagoli and Sol et al. research, sensitivity analysis involved standard statistical metrics: varying the result by ±15% across categories.

For the Sol et al. paper, their estimate is considered the conservative estimate due to their explicit indication that their estimates are conservative and should be interpreted as lower bounds. The standard estimate is calculated by adding 15% to the conservative estimate, followed by an additional +15% to reach the optimistic estimate. Several qualitative factors likely contribute to these standard and optimistic estimates being higher than the point estimate. Some of these factors include:

- Expected working years of women likely exceeding 40 years
- Potential health benefits are not directly considered, but evident in other studies (Babagoli et al., 2022; USAID, 2022).
- Optimistic projections for future inflation and discount rates
- Project delivery efficiency
- Anticipated long-term benefits such as delayed marriage and childbirth ages
- The initial point estimate considers benefits for the current cohort of pupils during implementation. However, the sustainable nature of the MHH intervention implies future cohorts will also benefit, amplifying the ROI significantly due to constant costs and increased beneficiaries.

Sheet 2: ROI Background Calculations

This sheet outlines the comprehensive calculations supporting the ROI estimates featured in Sheet 1. It delves into the specific benefit and cost categories considered, the chosen estimates, and the sources upon which these calculations were founded. By providing a thorough breakdown of the calculations, benefit categories, and specific intervention scenarios, Sheet 2 enhances transparency and facilitates a deeper understanding of the underlying mechanics of the ROI estimates presented in Sheet 1.

Benefit Categories of Workplace Interventions

- Row 10: The USAID report introduced an additional benefit category named 'time savings' for one MHH intervention. However, this category contributed only 4% to the total benefits and was heavily context dependent. Given its limited economic value and lack of likely replication across different settings, this aspect was omitted from the calculations. This omission aims to enhance the generalizability of the results.

- Row 7: The benefit category 'reduced absence' highlights the positive impact on earnings or revenue resulting from reduced hours missed by women due to improved MHH.

Details on Intervention Type B (Row 22, Programme 1):

- This specific workplace intervention was designed to encompass a WASH (Water, Sanitation, and Hygiene) infrastructure component, particularly aimed at enhancing latrine facilities for women. However, the company decided against implementing the recommended infrastructure upgrades. As a consequence, this intervention does not align with Intervention Type A, but instead falls within Intervention Type 2.

Economic benefits of School-Based interventions

- Intervention Types C-F were focused on school-based interventions that enhanced a girl's school attendance. Alongside quantifying the additional years of schooling, the database also displays the monetized benefits derived from increased school attendance. This involves calculating the returns of additional schooling (higher education often leads to enhanced future earnings). For consistency throughout the MHH cost-benefit database, a uniform method was employed for all four school-based interventions: the human capital approach as demonstrated in Babagoli et al. (2022). Columns AD and AE show the key statistics needed to be able to calculate the monetized benefits, with the sources clearly stated.

Economic benefits of reduction in Disability-Adjusted Life Years (DALY)

- Intervention Types E and F demonstrated positive outcomes in terms of reducing DALYs. To translate the significance of a '0.5 DALY reduction,' it is necessary to determine the monetary value of 1 DALY in the context of Kenya (the implementing country). This monetary value, specified in Babagoli et al. (2022), stands at $4,900. The overall monetary value of DALY reductions is computed by multiplying the estimates (e.g., 1.41 and 0.484) by $4,900 (refer to column J).

Notes on Intervention Type E and F (rows 51-70)

- The CE estimates signify the supplementary effect of introducing menstrual cups alongside an MHH education programme. This reveals the added costs and benefits of incorporating a menstrual material element into an MHH educational intervention. It does not show the costs and benefits of running solely a menstrual material intervention without an MHH educational component.

Reduction in DALYs was Based on Data on Reduction in:

- the incidence of chlamydia, gonorrhoea, trichomoniasis, bacterial vaginosis, and candidiasis.

Implementation Cost Details

- Programme costs were calculated from the perspective of a government programme or healthcare provider implementing these interventions, encompassing essential logistics and personnel expenses.

Sheet 3: Extra MHH Costs Data

Challenges in Gathering Data

- Assembling the data on this sheet was a challenging task. One of the primary hurdles was the scarcity of organisations possessing precise costs for their MHH interventions.

- Many instances involve integrating MHH components into regular WASH interventions, making it complex to discern which costs exclusively pertain to the MHH elements.

- Extracting cost data from implementing organisations was a considerable challenge, further compounded by the need to consolidate a variety of fragmented information pieces. Challenges encountered include:

    - Some programmes provided only total programme costs without specifying the number of beneficiaries, units provided, or intervention duration. In such cases, calculations were required to deduce unit prices and costs per beneficiary, facilitating the creation of a database that enables comparison of intervention costs.

Database as a Starting Point

- This database stands as an initial endeavour to craft an MHH intervention cost database, based on the limited available data and information. It should be seen as a starting point and first step toward constructing a comprehensive, universal cost database for MHH interventions.

Important Caveat

- A crucial point to consider is the absence of consensus regarding the quantity of menstrual materials required per woman annually. This absence hindered the calculation of costs for fully addressing a woman's menstrual needs per year. Ideally, one would like to compare the costs of supplying a woman with a year's supply of menstrual material using menstrual cups, disposable pads or reusable pads.

- Nevertheless, the implementation cost per woman per year was successfully calculated for all interventions. This metric offers informative insights into the costs of specific interventions, irrespective of the quantity of pads/cups provided.

- For instance, consider row 40 in sheet 3 where PSI supplied 2,449 girls with a total of 9,796 reusable pads, averaging 4 reusable sanitary pads per girl per year. In contrast, KMERPad distributed 9,000 reusable sanitary pads among 3,000 girls, which translates to an average of 3 pads per girl per year. This illustrates the complexity of straightforwardly comparing intervention costs per year. The disparity in pad distribution between PSI and KMERPad introduces variations in benefits and ROI potential for each intervention. The greater pad allocation by PSI suggests potential differences in the benefits generated and the ROI achieved compared to the intervention by KMERPad. As a result, a nuanced understanding of these distribution variations is essential when interpreting and comparing intervention costs and outcomes.

Costs of Menstrual Cups

- The typical lifespan of a menstrual cup is generally assumed to be 5-10 years, with a 5-year duration being more relevant[1] in low-income settings with limited WASH facilities.

- Factoring in the 6.4% likelihood of beneficiaries losing the menstrual cup is vital when determining the implementation costs, based on the literature[2]. Replacement costs are accounted for by adding 6.4% to the implementation expenses.

- While a systematic review by Van Eijk et al. (2019) yielded a range of $0.72-$46 (median: $23-$30) per menstrual cup, this data was mostly drawn from high-income countries and is less applicable to low-income settings. Consequently, these figures were excluded from our evidence briefs.

Costs of MHH Education

- Especially in cases where capacity building has taken place (e.g. training the teachers) this may lead to an underestimation in the cost-benefit estimates. This underestimation stems from the anticipated positive impacts on future cohorts who will also benefit from empowered MHH-trained educators.

Conclusion

In conclusion, the process of assembling this database was marked by considerable challenges, from consolidating diverse cost data to the absence of consensus on key metrics. Nonetheless, this database stands as an important initial step toward establishing a comprehensive cost database for MHH investments. As the field advances, a collective effort is required to standardize data collection methodologies, enabling us to better understand the costs and returns of MHH interventions and their broader impact.

[1] Estimation based on our conversations with several key MHH implementers in African and Asian Lower- and Middle-Income countries.
[2] van Eijk, Anna Maria, et al. "Use of menstrual cups among school girls: longitudinal observations nested in a randomised controlled feasibility study in rural western Kenya." Reproductive health 15.1 (2018): 1-11

Nurse checks an expecting mother's blood pressure.
Mali, 2010. ©Population Services International