



ABSTRACT

Inadequate menstrual hygiene management due to lack of awareness, associated taboos and indiscriminate disposal of sanitary waste, is a common phenomenon in most developing countries including India. While using sanitary pads has really seen an uptake over the last couple of years especially in urban areas, awareness on the appropriate mechanism for their disposal is limited. This study is an attempt to understand and identify the barriers for enabling a conducive environment to manage menstruation in the most effective way. Through this study, the authors also tried to analyze the willingness to shift and pay for the use of environmentally safer sanitary products and resort to a more sustainable system.

Keywords: willingness to pay, menstrual health, urban menstruation, sanitary waste

BACKGROUND OF THE STUDY

For women around the globe, access to safe and dignified menstruation is a fundamental need. Inadequate menstrual hygiene management (MHM) is a public health concern. Along with that, deficient information and lack of awareness regarding menstrual health and hygiene practices are often the causal agents of unnecessary restrictions which in turn affect the lives of menstruating women. A growing evidence base from low- and middle-income countries also shows that many menstruating women are not able to manage their menses and associated hygiene with ease and dignity. This challenge is even more profound in a country like India, where menstruation is regarded as a societal taboo. The uncalled social norms promote a high level of secrecy about even the most basic facts related to menstruation, leading to shame and exclusion for women and girls and create various physical and psychological challenges. These system-level challenges, in conjunction, not only negatively impact the sexual and reproductive health of adolescent girls but also affect their self-confidence and their ability to make decisions and take actions. In a nutshell, inaccessible WASH facilities, inadequate access to information and materials are the major barriers for women and girls in managing their menstruation effectively and with dignity.

Menstrual Hygiene Alliance of India (MHAI), has estimated that there are 336 million menstruating women and adolescent girls in India, of which around 36 percent use disposable sanitary napkins, which accounts to 121 million. On an average, the number of sanitary napkins used per menstrual cycle is estimated to be 8, which implies that in India, 2.3 billion non-biodegradable sanitary napkins need to be managed safely. Studies have also shown that a single woman can generate up to 125 kg of non-biodegradable menstrual waste through her menstruating years. According to a joint report by Water Aid India and MHAI, depending on the materials used in the manufacture of the sanitary napkins, it could take up to 800 years to decompose a single sanitary napkin. Given the increasing availability, use and generation of non-biodegradable menstrual waste, aided by lack of sustainable systems for appropriate disposal, most cities in India stand in need of effective solutions in managing both menstruation and the related sanitary waste in a sustainable manner.

In an ideal situation, solutions for sustainably managing waste should be based on the type of waste rather than the quantity generated. Management of sanitary waste is a colossal issue, the specially because majority of the commercially available sanitary products are made with non-compostable plastic liner, non-woven cover, and SAPs. SWM Rules 2016 recommend that all menstrual waste should be transferred and treated to one of the 215 large scale common bio-medical waste incinerators that exist across the country. However, this would require creating an efficient and a self-sustain system for segregation, collection and transportation of menstrual and other sanitary waste. Although economically viable models for this have been formulated but these models are not implemented successfully. On the other hand, small scale incinerators have obtained traction in the last few years and various government schemes also recommend and accept them to treat sanitary waste. However, models that are readily available in the market today do not have appropriate emission control measures and burn the waste at a low temperature leading to inefficient combustion, in turn, releasing carcinogenic toxic fumes. Issues of inappropriate placement, ventilation and operation of units

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are also widespread. Small scale incinerators can be used as a practical solution if certain measures to ensure the safety of users and staffs operating these units are ensured. And it is extremely important that the environmental risk of incineration against the environmental risk of disposal in landfills is analyzed and understood better.

MHM IN URBAN CONTEXT- A BRIEF REVIEW OF LITERATURE

Menstruation is a natural physiological process that indicates the beginning of reproductive life, yet, the topic has been under-researched in the WASH as well as the health and education sector. Researchers started doing more empirical and cohesive studies on MHM in the mid 2000s. Sommer et al establishes the link to the definition of MHM to a roundtable in Oxford in 2005 which was hosted by UNICEF, although the uptake of interventions was not fast paced until around 2010. In 2012, the Joint Monitoring Programme by WHO and UNICEF decided to include MHM as a global advocacy issue in schools and health facilities to further strengthen the efforts for the post-2015 sustainability goals. The JMP report also defined MHM clearly for the first time, as the process where:

“Women and adolescent girls are using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials.”

It may be noted that, while menstrual absorbents and adequate water & sanitation facilities are vital, there are other factors that needs to be considered in policy. It has been noted by Bobelhat that pain management, the enabling environment within which the menstruating women/girls exist, and uncalled taboos and stigmas surrounding menstruation, are not covered in this definition. It is staggering to comprehend the silence on taboos and stigma, given how prime these issues are to an overall understanding of menstruation in a cohesive manner, and the severe impact that these can have on the rights, dignity and well-being of women.

Adding to this, while several research studies on MHM have been conducted in the rural context in India, a very few has focused on the urban scenario. Furthermore, the studies on MHM conducted in the urban space including in slums, have mostly focused on analyzing age at menarche, knowledge of menstruation and menstrual hygiene practices (Dubey et al, 2012) and mostly focusses on adolescent girls as the respondent group. Nearly all studies in the urban context evaluates menstrual hygiene through lens of the following factors-use and maintenance of menstrual products, bathing practices during menstruation and handwashing.

Results of many studies have also shown that the percentage of urban women and girls using sanitary napkins is high, for example, a comparative study between urban and rural adolescent girls in Bareilly (Uttar Pradesh), Nagpur (Maharashtra) and Jaipur (Rajasthan) stipulate a significantly higher usage of commercial sanitary pads among urban adolescent girls compared to those living in rural areas (Dubey et al 2012 and Kumar et al 2016).

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Some studies, such as the one in Bilaspur (Jitpure, 2016) and slums in Kolkata have also shown the prevalence of high levels of gynaecological morbidity including menstrual disorders such as oligomenorrhoea, polymenorrhoea, dysmenorrhoea, and irregular periods. Other associated morbidities including back and joint pains, fatigue, abdominal pain and bloating are also reported by Bhattacharyya et al. The major causal factor of such morbidity is low intake of iron rich diet and insufficient resting time during the menstrual cycle.

While there has been a surge spike in the amount of research going on in the MHM issues, however, most of the studies don't factor in the consequences of unscientific disposal of sanitary waste to human health and the environment and relate with other factors for effective menstrual management.

In a paper by Rajagopal and Mathur (2017) some light has been shed on the challenges faced by girls and women in managing menstruation—such as unsupportive environments, access to and use of sanitary products and health needs. This study dwells on the available literature to evoke the issues and challenges faced by menstruating women and girls living in urban areas while highlighting the interlinkages between these different factors including use of absorbent, disposal of sanitary waste, enabling environment to manage menstruation, and associated taboos.

PROBLEM STATEMENT

With the prevalent interdictions revolving around menstruation, it is not surprising that menstrual waste in India is a silent issue. As a result, there has been a lot less attention given towards finding innovative solutions that can positively impact the lives of menstruators and also the waste pickers/collectors dealing with menstrual waste. Appropriate collection and disposal of menstrual waste is still lacking in most of the cities in India. Most of the women dispose of their sanitary pads or other menstrual waste together with the domestic solid waste in same waste bins that ultimately become a part of municipal solid waste.

This creates a possibility and put the lives of the manual waste management workers/waste pickers/scavengers, who constantly handle menstrual waste with their bare hands at risk. Many a time, these workers are not even equipped with personal protective gears. These sanitation workers dealing with the hurdle of unblocking the sewage system at times must dive into the sewage pits to unclog the pipes. However, in rural areas, women mostly use reusable and non-commercial sanitary materials like reusable pads or cloths. Thus, they generate lesser amount of menstrual waste as compared to women in urban areas who rely on commercial disposable pads. Literature suggests that, most often, the menstrual waste is disposed of according to the type of product used, cultural beliefs, and location of disposal. In slum areas, women dispose their menstrual waste into pit latrines as burning and burial is difficult due to limited private space.

MHAI has identified three main concerns that are prime to the management of this huge and growing non-biodegradable menstrual waste in India. Firstly, scarcity of appropriate disposal and treatment options leading to unsafe management of the waste. Secondly, many women lack access to available sanitary waste management options and even when they are available

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their use is limited because of a continued culture of silence associated with menstruation. And thirdly, lack of safe disposal options may lead women using otherwise hygienic products in an unhygienic manner (e.g., use a pad for longer than it should be).

RESEARCH OBJECTIVES

The study aims to improve our understanding of menstrual hygiene management and practices in the urban context. The overall objective of the study is to understand the knowledge, attitude and practices related to menstrual hygiene management in urban settings and identify the enablers for sustainable menstrual waste management.

The specific objectives of the study are:

1. To understand and analyze current MHM practices across several groups (working women, housewife, and college/school going students) in the urban setting.
2. To understand the enabling environment for managing menstruation in a healthy and effective manner and identify the key barriers.
3. To understand the demand and supply for alternate, environmentally-safer products.

This study presents an opportunity to identify aspects for a gender-sensitive policy and interventions that address menstruation needs and also the issue of sanitary waste management.

METHODOLOGY

The research was conducted by collecting primary data through an online survey questionnaire along with help from secondary data from a combined desk review of existing documentation. This study used a cross-sectional, qualitative and quantitative survey questionnaire to collect primary data from menstruating women in Tier 1, Tier 2 and Tier 3 cities of India, as well as from outside India. According to the objectives mentioned above, a predesigned and pretested self-responding questionnaire with both close and open-ended questions was prepared with the opinion of experts. The study used a non-probability sampling method, known as snowball sampling method to collect primary data from 243 respondents. In this sampling method, the researchers based on their own judgement nominated menstruating women as respondents for the survey. In turn, the first subject recruited to the sample group provided multiple referrals for the survey. Each new referral was explored until primary data from sufficient number of samples were collected and data collection was saturated.

While collecting data through this exponential and non-discriminative snowball sampling method, it was also taken into consideration to collect data from various age groups and profile to minimize the bias. Statistical analysis was done by percentages and chi-square test. Since menstruation is a sensitive subject, the confidentiality of the research was emphasized in the beginning section of the questionnaire and the purpose of the study was shared with the participants along with the online questionnaire. They were given a choice to not to respond to certain questions. Statistical significance of differences between groups was tested and was significant.

KEY RESEARCH FINDINGS

We present the brief findings from our survey done with 243 respondents below:

Characteristics of the Sample Population

The study tried to gather primary data from menstruating women from the peri-urban and urban spectrum. 32 percent of the population belonged to Tier 1 cities, 45 percent from Tier 2 cities, 18 percent from Tier 3 cities & towns and 5 percent from outside the country.

Here, Table 1 presents the demographic and socio-economic characteristics of the sample population. As we can see, the largest category of respondents belonged to the age group of 26-40 years of age (57 percent of the sample population), while 27 percent of the population had an average annual income of Rs. 3,00,000-Rs. 6,00,000. Finally, majority of the population was working class.

Table 1: Demographic and Socio-Economic Characteristics of the Sample Population

Variables	Respondents (n=243)
Age (years)	
12-18	1%
19-25	38%
26-40	57%
41-55	4%
Average Annual Income (Rs)	
Less than 3,00,000	19%
3,00,000-6,00,000	27%
6,00,000-10,00,000	12%
10,00,000-15,00,000	5%
More than 15,00,000	6%
Not Applicable (*In case of students or housewives)	31%
Category	
College Student	22%
Housewife/Homemaker	12%
School Student	2%
Service/Business/Self Employed	64%

Use of Absorbent

Evidence suggests that a greater number of menstruating women and girls in urban areas use commercially available sanitary pads as compared to rural areas. As suggested by Paria et al, this difference is also highly statistically significant. In our study, it was reported that 68 percent of the total population use commercially available non-biodegradable sanitary pads, while 24 percent use bio-degradable or compostable sanitary napkins. Here, the use of cloth was reported by only 1 percent of the population.

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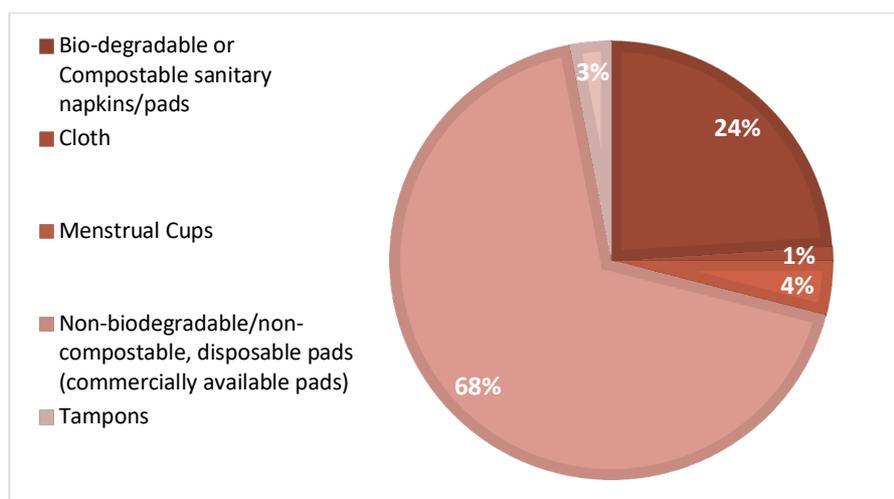


Figure 1 : Use of Absorbent, n=243

Further, it was also reported that on an average, a respondent using non-biodegradable pads uses 14-15 pads during one menstrual cycle. Since majority of the population use non-biodegradable sanitary pads in the urban scenario, it is imperative to further learn about their disposal practices and their willingness to shift to environmentally safer menstrual products.

As mentioned above, non-biodegradable pads are problematical because of the nature of ingredients used to manufacture them. Commercially available pads are 90 percent plastic; even the fabric upper layer is a plastic woven sheet. Adding to that is the plastic packaging, plastic wings and adhesives, super absorbent (plastic) polymer gels, and in a world, where we are trying to fight plastic waste, this adds to the woes. As suggested by Eco Femme, one pad is equivalent to almost 4 plastic bags. Since 165 (68 percent) respondents on an average uses 14 pads during one menstrual cycle, it produces sanitary waste equivalent to 9240 **plastic bags** only during one menstrual cycle. If we take this reference to estimate the sanitary waste generated for the entire country, it becomes exponential. Thus, shifting to alternate products and (or) sustainable management of sanitary waste is need of the hour. At this juncture, our choice of using a certain sanitary product need not only be driven by discretion, convenience and comfort, but also the environmental repercussions.

Sanitary Waste Disposal

As mentioned above, sanitary waste disposal in India has become a mammoth task with increase uptake in the use of sanitary pads and especially because of the plastic used in the manufacturing of these products, which in turn poses a significant threat to the environmental and public health. In lieu of this, the respondents were assessed on their knowledge and awareness about the environmental and public health hazards caused due to the unscientific disposal of sanitary waste. While 84 percent of the population was aware of the hazards, 16 percent were not.

Another major issue with sanitary waste has been its categorization. In theory, sanitary waste falls under plastic waste because of the plastic materials used in the manufacturing of the products and also bio-medical waste because it is contaminated with blood and body fluids,

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and hence should be incinerated, autoclaved or microwaved to destroy the pathogens. But in practice, sanitary waste falls under the jurisdiction of Solid Waste Management Rules as domestic hazardous waste. Unless covered properly or marked, this practice poses a serious health risk to the waste collectors who sort through waste. Under these Rules, pad manufacturers' sole responsibility is to provide a pouch (often plastic) to cover the used pads in before disposing of them with dry waste. In India, the lack of concern for sanitary waste management is reflected in the fact that there is no reliable statistics on the subject. Therefore, in exercise of the power conferred by section 14(i) of the Solid Waste Management, Rules, 2016 and the objections and propositions received from the general public, the Government of India through CPCB has framed the guidelines on sanitary waste management to ensure proper disposal of sanitary waste. However, most of the existing sanitary waste management facilities are practicing under SWM Rules, 2016. Some of the common practices for disposal of sanitary waste, as given in the MHM Guidelines 2015 is as below:

*Table 2 Disposal Practices According to the Safety Standards.
(Source: MHM Guidelines 2015)*

Unsafe  Safe	Common practices
	Throw them unwrapped into fields, rooftops, etc.
	Wrap them in paper/ plastic bag and throwing them outside
	Drying, wrap in paper/plastic bag and throw in dustbins (mostly non-rural)
	Bury them for de-composting
	Throw them in latrine / toilets
	Burn it (rural areas and peri-urban areas)
	Use small scale incinerators (community or school level)
	Municipal waste management / burning in health clinics (more urban)

Within this framework, we have looked at the disposal pattern of the sanitary waste from our study. It can be seen from the graph below that, 45 percent of the population dispose the sanitary pads in a separate dustbin, and 43 percent of the dispose it together with other solid waste but with a wrapper around it.

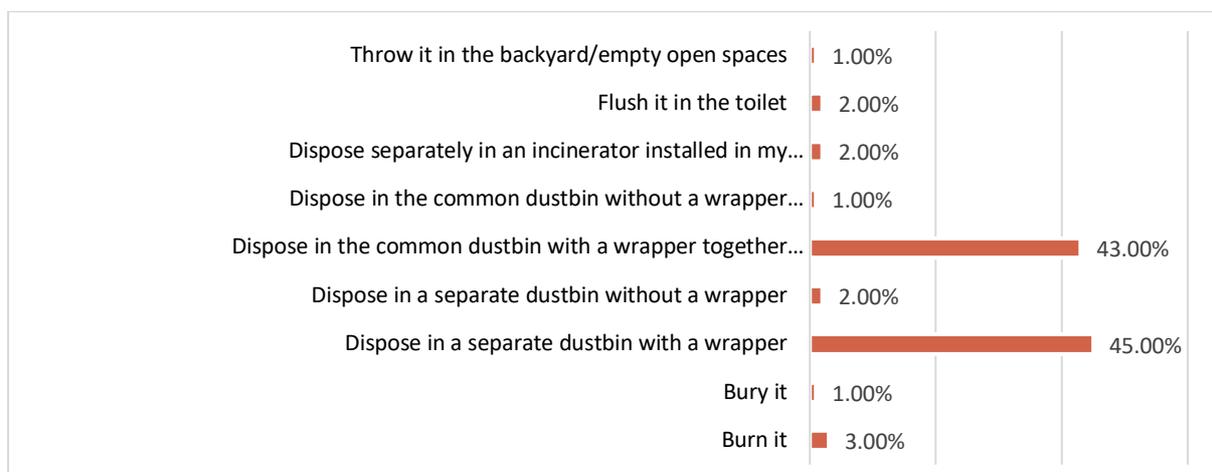


Figure 2 Disposal pattern of sanitary products, n=243

Menstrual Health and the Associated Taboos

In India, and also as in many other countries, menstruation is considered as a social and cultural taboo. Because of the prevalent taboos and myths, many girls and women are subjected to restrictions in their daily lives during their menstruation cycle. In our study, while 40 percent of the respondents reported that they follow no restrictions or associated taboos, 37 percent reported that they do not perform puja or do not worship during their menstrual cycle. Evidence also suggests that not performing “puja” is a major restriction among urban girls whereas, not entering the kitchen is the main restriction among the rural girls during their menstrual cycle. However, it is interesting to note that, the respondents with no restrictions are mostly from Tier 1 and Tier 2 cities in India and abroad, suggesting that these restrictions and taboos are more profound in the Tier 3 cities and towns.

Table 3 Restrictions and Taboos Associated with Menstruation, n=243

Taboos/Restrictions	Responses (n=243)
No restrictions	40%
Do not perform puja/do not worship	47%
Do not touch pickles	5%
All of the above	5%
Do not cook/enter kitchen	2%
Do not go out	1%

According to study by Kumar and Srivastava in 2011, the respondents reported that during menstruation their body emits some specific smell or ray, which in turn spoils preserved food and, therefore, they are not allowed to touch sour foods like pickles. Such taboos about menstruation not only have an impact on their emotional state, mentality and lifestyle but most importantly, also on their **health**. Based on the available evidence, it is pertinent to follow a strategic approach for combating the myths and social taboos associated with menstruation in order to improve the reproductive health of adolescent girls and women.

Menstruation also brings certain health disorders which can disrupt the routine activities in our daily lives. For example, **Premenstrual Syndrome (PMS)** which can lead to a variety of physical and psychological symptoms ranging from bloating, headaches, fatigue, painful breasts, fatigue, anger, anxiety, mood swings, crying and depression. Most women and menstruating girls also experience normal to severe menstrual cramps at some point during their lives. It is important that during periods, women can get adequate rest and care. As seen in our study, only 34 percent of the total population reported to be getting enough rest during their menstrual cycle. This coupled with low intake of iron rich diet (only 14 percent reported to take iron rich diet) is the major cause of prevalence of high levels of gynaecological morbidity. We asked the respondents if they consider their surrounding environment conducive enough to effectively manage menstruation, and surprisingly, only 44 percent of the total population feel so. It was also seen that lack of support from their family during menstruation increases the domestic responsibilities and circumscribes movement, making it more difficult for them to address their sanitation and hygiene needs.

Willingness to Shift and Pay for Environmentally Safer Sanitary Products

We have already seen in the previous section that 68 percent of the total population has reported to be using the regular sanitary pads which are non-biodegradable. Given the scale of the problem to manage the sanitary waste, we should look into an opportunity to forge an alternative path that is centered on shifting towards safer sanitary products along with, solutions for decentralized management of sanitary waste.

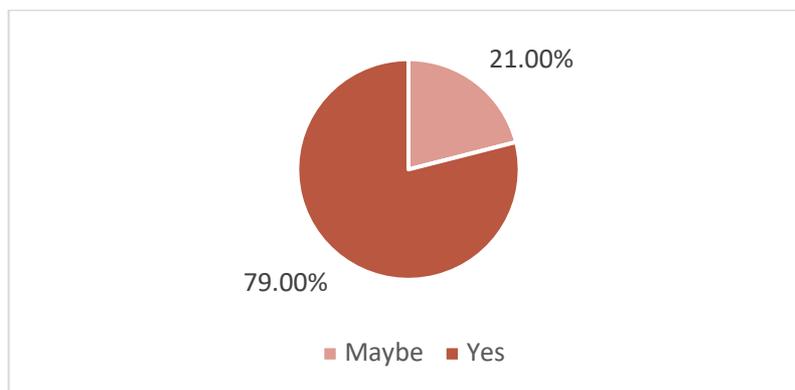


Figure 3: Willingness to pay for environmentally safer products, n=165

We asked our respondents using non-biodegradable pads on their willingness to shift towards environmentally safer products, and 79 percent of them reported that they are willing to adopt/shift. While 53 percent of the population was aware about the comparatively safer products available around them, the convenience & comfort, ease of availability and hygiene concerns were identified as the major barriers hindering this shift. In the end, it all boils down to the choice. Menstrual products and practices offer an opportunity for us to act decisively and meaningfully. This is an issue that transcends boundaries of time, space and gender.

It is also interesting to note here that majority of the population that is willing to shift, is more likely to use organic disposable pads rather than any other product.

When we talk about willingness to pay more for the safer product, 67 percent are willing to pay more, while 29 percent are not sure, and 4 percent does not want to pay more, even if they are willing to shift. We also found that, willingness to pay more is positively co-related to the average annual income, meaning with an increase in average annual income, the willingness to pay increases.

Based on literature, an average woman menstruates for about 30 years. A menstrual cup, that costs about Rs. 1000 lasts for about 10 years and a full-cycle cloth pad kit that costs about Rs. 1500 lasts for approximately about 3 years. The disposable sanitary pads can be bought at Rs. 165 each month, roughly Rs. 2000 each year. Although in alternate products might seem expensive in the shorter run, however, in the graph below, it can be seen how the options stack against each other in the longer run, that is, in 30 years of total menstruation. So, even if the environmentally safer products are expensive than the traditional non-biodegradable pads, it offers greater benefits in the longer run.

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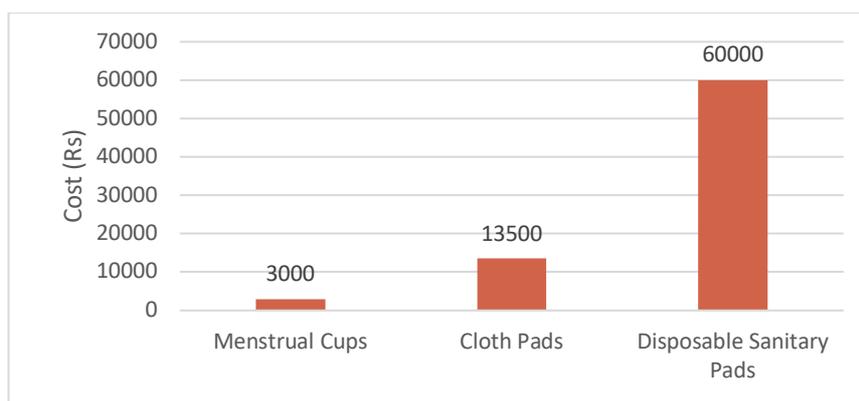


Figure 4 : Cost comparison between different sanitary products for the entire menstrual cycle
(Source: <https://www.greenthered.in/>)

Not only has this, although the commercially available pads are convenient to use, plastic in them effectively traps the moisture within, and provides a breeding ground for bacterial and fungal infections. This can cause inflammation and allergic reactions in the vagina due to the plastic, and also irritation. It can also lead to pelvic inflammatory diseases, and in some cases, cervical cancer. It all depends on the type of plastic used and how long the pads are worn. Thus, shifting to a safer product doesn't only positively affect the environment but also the physical health of the user.

CONCLUSION

This study aimed at assessing the perspectives and challenges faced by women and girls to effectively manage menstruation and also their willingness to shift to environmentally safer products. While the awareness around menstrual hygiene management has seen an upward shift in the last few years, the progress is limited to certain segments linked with socio-economic profile, educational level etc. The focus on Menstrual Hygiene Management is tilted more towards the use of proper menstrual absorbents, breaking the myths, personal hygiene practices during menstruation. It is essential to look at MHM more comprehensively by integrating aspects around menstrual waste management, innovation for cost effective and environmentally safer sanitary products, creating a more supportive environment for managing menstruation with ease. It is recommended that including men and boys in the conversation around MHM is extremely crucial.

While shifting to environmentally safer or reusable sanitary products are recommended for effective menstrual waste management, making their segregated disposal mandatory, developing separate value chain for sanitary waste treatment and encouraging decentralized and effective incineration facilities at housing societies, institutions and public places would be a welcome step.

The options for bio degradable sanitary pads have also improved recently with many available brands in the market like Pee Safe, Caramesi etc. but they are priced higher when compared to the regular pads. Ease of availability, comfort, quality and safety concerns are the key factors affecting the shift towards better-safer menstrual products. Financial status of the user also

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restricts or helps the uptake of such products. In order to increase usage of bio degradable sanitary pads, it is important for companies to come up with user-friendly, easily available and cost-effective options for the consumers.

We have seen that the challenges and the interlinkages are complex both in terms of ensuring menstrual hygiene as well as sustainable management of sanitary waste. This calls for a comprehensive and holistic approach that takes into account key players and relevant stakeholders. In this regard, the MHM value chain could provide a useful conceptual framework. It outlines the need for a holistic approach to MHM—from creating awareness about safe menstrual hygiene to usage of environment friendly sanitary products, sanitary waste management and creating a conducive environment.

It is time that MHM is addressed for the entire value chain. For any urban area, where multiple departments are concerned with the same topic, it becomes extremely essential to ensure a convergent approach with clear roles and responsibilities across the value chain for various authorities/departments. Information, education and behavior change interventions are relevant to manage sanitary waste at source and ensure that the sanitary waste is getting managed in a way that is sustainable.

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