



Managing Menstrual Waste in India: Overcoming Challenges with Effective Solutions

Dr Parul Shah,

Assistant Professor, Indus Management Studies, Indus University, Ahmadabad

Abstract –

Menstrual Hygiene management is a growing concern in India, where many women and girls face challenges associated with period poverty and inadequate sanitation in educated urban areas. Urban areas we have smart mall, Restaurant, PVR, Petrol Pumps, schools where we have smart washroom but still educated girls or women totally ruined all the things. They know about how to throw the usable pads but still they are drop the pads openly, not to use flush. We cant say here that only uneducated person doing this. Its responsibility of everyone to clean the place and destroy the waste as per protocol .yes, we need to develop innovative and sustainable solutions.

In addition, there is a cultural stigma associated with menstruation that makes it difficult for women and girls to freely discuss their period-related needs and challenges. To address these issues, we propose an innovative solution: a menstrual waste management system that utilizes a portable, solar-powered vacuum machine to collect and store menstrual waste. This machine would operate on a pay-per-use basis, allowing women and girls to easily dispose of their menstrual waste in a sustainable and hygienic manner.

Overall, our proposed solution offers a cost-effective, sustainable, and culturally sensitive way to manage menstrual waste in India, improving the health and well-being of millions of women and girls.

Keywords: Menstrual Hygiene, Waste Management.

Introduction-

Menstruation is indeed a significant aspect of a woman's life. It is a natural biological process that occurs in the reproductive system, involving the shedding of the uterine lining through bleeding from the vagina. Menstrual cycles typically occur every 28 days, but the frequency can vary among women, ranging from every 23 to 35 days.

Opinions on menstruation can vary among individuals. Some people may view it as a positive and essential part of the reproductive cycle and the potential for creating life. However, others may perceive it as a challenging and uncomfortable experience due to the associated pain and inconvenience.

One of the concerns related to menstruation is the management of sanitary waste. Used sanitary napkins, along with other similar items like diapers, condoms, tampons, and incontinence sheets, are classified as sanitary waste. According to the Solid Waste Management Rules (SWM) of 2016, such waste should be disposed of properly, typically with dry waste.

The survey findings shed light on the menstrual hygiene practices among women in different regions of India. In Karnataka, it was discovered that 44% of women aged between 15-24 still rely on cloth during their menstrual cycles. This is a matter of concern as using cloth is highly unhygienic and can lead to various serious diseases. The lack of awareness appears to be the underlying cause of this issue. Interestingly, Karnataka has the highest percentage among South Indian states, with Kerala following closely at 40.2% and Andhra Pradesh at 36.2%. Another disheartening statistic revealed by reports is that 19% of households in Karnataka do not have access to proper toilet facilities.

On the other hand, the survey highlights some positive trends in other regions of India. In Puducherry, an impressive 99.1% of women aged between 15-24 utilize menstrual hygiene protection, making it one of the highest rates in the country. Following closely behind are Andaman with 98.8% and the Nicobar Islands with 98.4%.

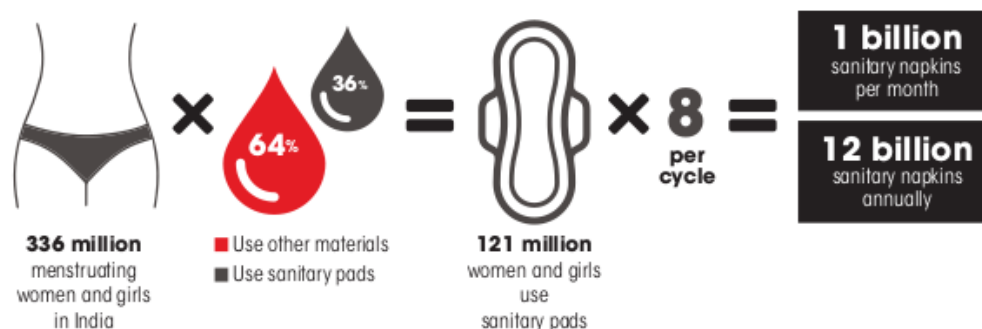
However, there are regions where the usage of hygienic protection during menstruation is significantly lower. Bihar, for instance, has the lowest percentage at 59%, with Madhya Pradesh at 61% and Meghalaya at 65%.

Taking an overall perspective, approximately 77.6% of Indian women across the country use hygienic protection methods during their menstrual days. Among these women, 64.4% prefer sanitary pads, while 15% still opt for local napkins. The National Family Health Survey-5 (NFHS-5) indicates that Indian women are generally more comfortable using pads or cloth rather than exploring alternative options. The utilization of menstrual cups and tampons remains limited, even in developed Indian cities, with only 1.7% of women preferring tampons and a mere 0.3% open to the idea of using menstrual cups.

Sanitary waste management has often received limited attention due to societal and cultural taboos surrounding menstruation. However, it is crucial to address this issue seriously and implement proper policies for its management. In India, for instance, where the Menstrual Hygiene Alliance India (MHAI) estimates that around 36% of women regularly use disposable sanitary napkins, there is a significant amount of waste generated. MHAI approximates that 1 billion sanitary napkins are used monthly, leading to an annual generation of 12.3 billion sanitary napkins, weighing approximately 137,483 tonnes.

Addressing the proper disposal and management of sanitary waste is essential for the well-being of both individuals and the environment. Efforts should focus on raising awareness, promoting sustainable alternatives like reusable menstrual products, and implementing effective waste management policies to minimize the environmental impact.

Figure 1: Estimated usage of sanitary napkins in India



Source: MHAJ Graphic prepared by CSE

The statistics you mentioned from the National Family Health Survey (NFHS-4) highlight the increasing use of disposable sanitary napkins among women in India, particularly in the age group of 15-24. This trend is seen across different states in the country, indicating a shift towards the use of commercially available menstrual hygiene products.

With factors like urbanization, higher incomes, improved product availability, and increased mobility, the use of disposable sanitary napkins is on the rise. However, this increase also poses challenges in terms of waste management and environmental impact.

Inadequate waste management practices, particularly in shared and public facilities, can contribute to environmental health risks due to poor hygiene. In many low- and middle-income countries, including India, where menstruation is often accompanied by stigma and taboos, the lack of proper waste management infrastructure adds to the challenges. This can result in anxiety, stress, and exposure risks for individuals, as well as environmental pollution in densely populated urban areas.

1. Fear of Leaks and Odor: Cloth may not provide the same level of protection as modern sanitary products, leading to a fear of leaks and odor. The constant worry about potential leaks and the associated social consequences can contribute to heightened stress and anxiety during menstruation.
2. Infection and Health Concerns: Unhygienic practices, such as reusing cloth without proper cleaning and disinfection, can increase the risk of infections and other health issues. The fear of contracting infections or developing complications due to poor menstrual hygiene can lead to heightened anxiety and stress.
3. Limited Mobility and Participation: Women who do not have access to proper menstrual hygiene products may face limitations in their daily activities and participation in social and educational settings. The fear of being unable to engage fully in work, school, or community activities due to inadequate menstrual protection can contribute to stress and anxiety.

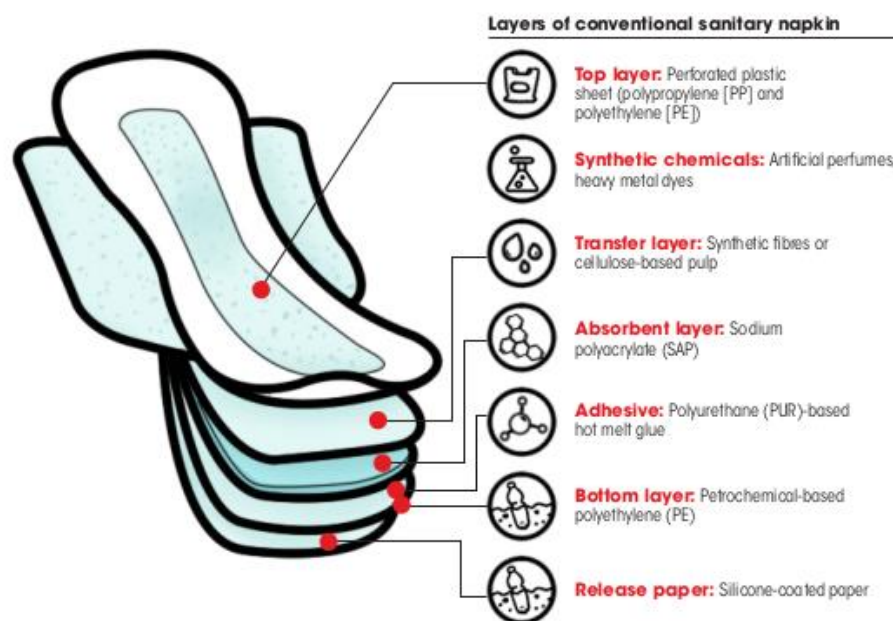
4. Societal Pressure and Expectations: In societies where the use of modern sanitary products is more common, women who continue to use cloth may feel pressured to conform to societal expectations. The fear of judgment and criticism from others can lead to increased stress and anxiety.

(It is important to note that these potential psychological effects are based on general understanding and observations, as well as studies conducted in different contexts. To gain a more comprehensive understanding of the specific psychological impacts related to unhygienic menstrual practices in densely populated urban areas in India, further research and data specific to this topic would be required.)

Addressing these concerns requires a multi-faceted approach. It involves raising awareness about proper waste management practices, promoting sustainable alternatives like reusable menstrual products, and implementing effective waste management systems in both public and private facilities. Education and advocacy can play a crucial role in dispelling myths, reducing stigma, and promoting sustainable menstrual hygiene practices that are both beneficial for individuals and the environment.

Components of Sanitary Napkins

Figure 2: Components of a sanitary napkin



Source: Ingredients Used in Conventional Sanitary Pads, Sparkleuser, 2020; graphic prepared by CSE.

Methodology

A structured search was conducted to identify relevant journal articles, reports, and other grey literature on menstrual hygiene management and the disposal of absorbents. Grey literature was included in the search due to the expected limited availability of peer-reviewed literature specifically focusing on menstrual waste disposal. The search was conducted between October and November 2017 and encompassed literature published within the past 15 years, starting from 2002.

The primary focus of the search was on the disposal and management of menstrual waste. Specific topics of interest included the types of absorbents used and disposal practices in urban and peri-urban areas of developing countries, socio-economic factors influencing disposal practices, the impact of safe disposal on empowerment and dignity, as well as sanitation practices, environmental and public health risks associated with menstrual waste, health and environmental risks related to incineration, cultural factors influencing the use and acceptance of incineration, disposal practices in public and institutional settings in the developing world, and policies or guidelines pertaining to menstrual waste disposal.

The aim of this comprehensive search was to gather relevant information and insights on menstrual waste management, considering various aspects such as social, cultural, environmental, and public health factors. By examining both peer-reviewed literature and grey literature sources, a more comprehensive understanding of the topic was sought to inform future research, policy development, and practical interventions in menstrual hygiene management and waste disposal.

Variation of Absorbents

The choice of menstrual absorbents varies among women and girls based on personal preferences, cultural acceptability, economic status, and local market availability. In rural areas, reusable cloth pads are commonly preferred, while in urban areas, commercial sanitary pads made of chlorine-bleached Kraft or sulphate pulp are more popular. Synthetic fiber rayon-based products, including deodorized options, are also available in the market but may contain chemicals like organochlorines. These chemical compositions can have antibacterial properties but may negatively impact soil microflora and decomposition when disposed of in the soil.

Different types of menstrual products used by women and girls include:

Reusable and Washable Cloth Pads: These pads are sustainable, cost-effective, easily available, and eco-friendly. They require hygienic washing and drying in sunlight, which acts as a natural sterilizer. Proper storage in a clean, dry place is essential to avoid contamination.

Commercial Sanitary Pads: Easily accessible in stores, chemist shops, or online, these pads are non-reusable, expensive compared to cloth pads, and not environmentally friendly. The cotton used in their making may contain pesticides.

Tampons: Internal protection options, tampons are soft plugs of material (usually cotton) inserted into the vagina to absorb menstrual flow. They can be expensive and are not easily degradable, making them less environmentally friendly. Natural alternatives such as sea sponge tampons are also available.

Reusable Tampons: Made from natural materials like bamboo, wool, cotton, or hemp, these tampons can be washed and reused. They function similarly to disposable tampons.

Menstrual Cups: Made of medical-grade silicone rubber, menstrual cups are inserted into the vagina to collect menstrual blood. They are reusable, environmentally friendly, and offer a sustainable and cost-effective alternative, especially in areas with poor sanitation conditions.

Bamboo Fiber Pads: These pads use bamboo pulp as an absorbing material, providing higher absorption capacity and safety. They are affordable, easily decomposed, eco-friendly, and possess antibacterial properties, ensuring infection-free menstruation. Bamboo charcoal pads, which are reusable and conceal blood stains, are also available.

Banana Fiber Pads: Low-cost sanitary pads made from waste banana tree fiber, such as those sold under the trade name "Saathi" in India, are environmentally friendly and decompose within six months after use. In remote rural areas, women may resort to using natural materials like cow dung, leaves, and mud.

Water Hyacinth Pads: Menstrual pads made using water hyacinth, such as those sold under the trade name "Jani," are cost-effective, easily biodegradable, and eco-friendly.

The availability and usage of these products contribute to managing menstrual waste effectively while considering factors such as affordability, sustainability, and hygiene.

Challenges-

Some of the challenges faced in managing menstrual waste in India include limited awareness and education, inadequate infrastructure and facilities, social stigma, and lack of accessible and affordable menstrual products. These challenges contribute to improper disposal practices, leading to pollution of water bodies, soil contamination, and health risks

Effective Solutions

To address these challenges, various solutions have been proposed and implemented. These include promoting menstrual hygiene education and awareness, advocating for the use of sustainable menstrual products such as reusable pads and menstrual cups, improving waste management infrastructure, and encouraging safe disposal practices. Additionally, initiatives focused on destigmatizing menstruation and fostering open

conversations around the topic have gained momentum, aiming to break down taboos and promote inclusivity.

Implementing comprehensive menstrual waste management systems requires collaboration between government bodies, NGOs, community organizations, and individuals. It is essential to prioritize investment in infrastructure, ensure access to affordable and sustainable menstrual products, and promote education and awareness campaigns targeting all segments of society. By addressing these challenges and implementing effective solutions, India can make significant progress in managing menstrual waste and improving the overall Economic & Environment Condition which is impacted by women.

GreenDispo: An Eco-friendly and Efficient Incinerator

The development of the GreenDispo sanitary pad incinerator is a significant innovation in the field of menstrual waste management. It incorporates several features and improvements to ensure efficient and hygienic disposal of menstrual waste in an automated manner.

One of the key innovations in the GreenDispo incinerator is its combustion chamber, designed to operate at high temperatures. The primary combustion chamber operates at 800 ± 50 °C, while an optional secondary combustion chamber operates at 950 ± 50 °C. These elevated temperatures, combined with a residence time of 2 seconds for gases, help to reduce harmful air emissions that may arise from burning plastics and chlorinated products, which can be present in menstrual pads. But, Reduction of gases – and which gases specifically- is not as same as no gases. It's still toxic to the individual and environment. It sounds less when you talk about one machine, let's say 100s of them are operating at the same time, boom, high amounts of toxic gases in the environment. Also what about the burning smell, plastic stinks while burning

Compared to other incinerators operating at lower temperatures, the GreenDispo incinerator aims to minimize the release of carcinogenic air emissions. This is achieved through the design of the combustion chambers and the careful control of temperature. The unit is also equipped with auto power and thermal cut-off features, ensuring user safety and energy conservation. Additionally, the incinerator is suitably insulated to further optimize energy efficiency.

The GreenDispo incinerator demonstrates impressive performance in terms of emissions control. The exhaust concentration of Total Particulate Matter (TPM), CO, SO₂, and NO_x were observed to be within acceptable limits. The unit also generates less than 5% ash per napkin, meeting the standards outlined in the Waste Management Rules of 2016 set by the Central Pollution Control Board (CPCB).

The unique features and adherence to recommended combustion temperatures and emissions standards have generated significant interest and demand for the

GreenDispo incinerator in the market. Responsible buyers, governments, and other agencies have shown keen interest in adopting this technology. The development of the incinerator is a result of collaborative efforts between government research and development institutions as well as the industry. This collaboration promotes indigenous capabilities and has the potential to create employment opportunities, showcasing the power of collaboration and innovation in addressing menstrual waste management challenges.



Salient Features

The GreenDispo sanitary pad incinerator offers a scientific and hygienic solution for the disposal of used sanitary pads. It incorporates energy-efficient heaters and an innovative design of the combustion chamber to optimize the incineration process.

The incinerator is capable of operating at a temperature exceeding 800 °C, ensuring complete and efficient combustion of the used sanitary pads. The optimized air-fuel ratio and heating cycles further enhance the effectiveness of the incineration process. GreenDispo is specifically designed to efficiently burn unbleached pads that contain high cellulose content and super absorbent polymers (SAP). This ensures that even pads with high moisture content and absorbent materials are effectively incinerated.

The exhaust emissions from the GreenDispo incinerator comply with the Bio-medical Waste (BMW) Management Rules of 2016. It eliminates the generation of dioxins and furans, which are harmful substances associated with incomplete combustion.

During the incineration process, the ash generated from the pads is collected in a separate tray, with the amount of ash generated per napkin being less than 5%. This aligns with waste management standards and facilitates easy disposal of the ash.

The incinerator is equipped with auto power and thermal cut-off features, ensuring safe operation. It also has automatic temperature control to maintain optimal combustion conditions. The incinerator is suitably insulated to ensure safe surface temperatures.

The GreenDispo incinerator is designed to be user-friendly and requires low maintenance. Its easy operation and maintenance make it a convenient solution for the disposal of used sanitary pads.

Overall, the GreenDispo incinerator provides an efficient, safe, and environmentally friendly method for the disposal of used sanitary pads, addressing the challenges of menstrual waste management.

Apart of that aforesaid machine we can start some other way for manage the Waste Management

- After use, a disposable sanitary pad or a tampon should be wrapped in a newspaper or toilet paper and put in a garbage bin. Almost every packet of pad now comes with instructions 'how to use' and 'how to discard', how come you only read 'how to use' but ignore 'how to discard'? Maybe female relatives of your family didn't teach you about pads and tampons, okay, but the packet is doing the job of teaching you? So you're not completely unaware here (unless you don't understand English)ss
- **Use of Environment-Friendly Chemicals:** The use of environmentally friendly chemicals in the manufacturing of sanitary products is a crucial step towards reducing soil and water pollution. By opting for biodegradable materials and avoiding harmful chemicals, manufacturers can contribute to minimizing the environmental impact of these products. Additionally, promoting the use of materials that decompose more easily can help accelerate the natural decomposition process. (Again, cloths)
- **Menstrual Management Guidance:** Providing guidance on menstrual management to adolescent girls and women is an essential aspect of promoting menstrual hygiene. Integrating menstrual hygiene management into the education curriculum can help remove stigmas, improve knowledge about proper hygiene practices, and provide access to necessary resources and support. This step can contribute to the overall well-being and empowerment of individuals, ensuring that they can manage menstruation in a healthy and dignified manner. Yes , Instructions are provided on the packet of menstrual

pads yet people choose to ignore them. But everything should be in local language.

- In advertisement ,kindly show how to discard it in proper manner.

In summary, it is important for manufacturers to disclose the chemical composition of sanitary pads, use environment-friendly chemicals to reduce pollution, and for menstrual management guidance to be integrated into educational curricula. These steps can help address environmental concerns, promote better menstrual hygiene practices, and empower individuals to make informed choices regarding their health and well-being.

Conclusion-

In conclusion, the management of menstrual waste in India is a critical issue that requires immediate attention and action. The challenges associated with menstrual waste, including lack of awareness, inadequate infrastructure, and societal taboos, pose significant obstacles to proper disposal and environmental sustainability. One thing I feel that when we show we are so developed at the same time we are underdeveloped because of before the sanitary napkins we use cloths but adds and everybody told us that it's unhygienic things but now promoters again told us use the cloth. So in the past year we were developed.

To address these challenges, it is crucial to promote comprehensive menstrual hygiene education and awareness campaigns to destigmatize menstruation and increase knowledge about proper waste management practices. Additionally, the development of robust waste management infrastructure, such as safe and accessible disposal facilities and efficient collection systems, is essential.

Sustainable and eco-friendly solutions, such as menstrual cups, reusable cloth pads, and biodegradable sanitary products, should be encouraged to reduce the environmental impact of menstrual waste. Collaboration among government bodies, NGOs, healthcare providers, and local communities is necessary to implement and monitor effective waste management strategies.

By prioritizing menstrual waste management and implementing innovative solutions, we can create a healthier and more sustainable future for women in India. It is a collective responsibility to ensure that menstrual waste is managed safely and responsibly, promoting the well-being of women, protecting the environment, and fostering a society that embraces menstrual hygiene with dignity and respect.

Reference

- Rajanbir Kaur,¹ Kanwaljit Kaur,² and Rajinder Kaur, Menstrual Hygiene, Management, and Waste Disposal: Practices and Challenges Faced by Girls/Women of Developing Countries, Hindawi, Journal of Environmental and

Public Health, Volume 2018, Article ID 1730964, 9 pages,
<https://doi.org/10.1155/2018/1730964>

- Myles F. Elledge, Menstrual Hygiene Management and Waste Disposal in Low and Middle Income Countries—A Review of the Literature, *International Journal of Environmental Research and Public Health*
- Das, P.; Baker, K.K.; Dutta, A.; Swain, T.; Sahoo, S.; Das, B.S.; Panda, B.; Nayak, A.; Bara, M.; Bilung, B.; et al. Menstrual Hygiene Practices, WASH Access and the Risk of Urogenital Infection in Women from Odisha, India. *PLoS ONE* 2015, 10, e0130777. [CrossRef] [PubMed].
- Nair, M.K.C.; Chacko, D.S.; Darwin, M.R.; Padma, K.; George, B.; Russel, P.S. Menstrual Disorders and Menstrual Hygiene Practices in Higher Secondary School Girls. *Indian J. Pediatr.* 2012, 79, S74–S78.
- <https://www.worldbank.org/en/topic/water/brief/menstrual-health-and-hygiene#:~:text=Poor%20menstrual%20hygiene%2C%20however%2C%20can,as%20hepatitis%20B%20and%20thrush>.
- <https://pubmed.ncbi.nlm.nih.gov/29675047>
- https://www.academia.edu/13235750/DISPOSAL_OF_MENSTRUAL_WASTE_TRENDS_LAWS_AND_SOLUTIONS
- https://cpcb.nic.in/uploads/MSW/Final_Sanitary_Waste_Guidelines_15.05.2018.pdf
- Shailshree Tewari, *Sanitary Waste Management in India: Challenges and Agenda*, Centre for Science and Environment, New Delhi, 2022.
- Read more at:
https://economictimes.indiatimes.com/news/new-updates/approximately-44-of-karnataka-women-aged-between-15-24-still-use-cloth-during-their-menstruation-cycle/articleshow/91840157.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst