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## An Assessment of Stakeholder Initiatives in Menstrual Waste Management in Himachal Pradesh: Efforts in Awareness, Disposal Practices, and Environmental Impact

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### Abstract

Menstruation involves the flow of blood and mucosal tissue from the uterus, typically starting between ages 10-12 and ending between ages 45-55. In India, women constitute 48.43% of the population, with 36% of reproductive-age women using sanitary pads. NHFS-5 reports that 64% of women aged 15-24 use sanitary pads. Annually, 336 million women menstruate, generating 12 billion pieces of menstrual waste, posing a significant environmental threat. Himachal Pradesh aims to be India's first green state by 2034 through renewable energy, but faces challenges from menstrual waste, with 86% of young women using sanitary pads. This study examines departmental roles in managing menstrual waste and awareness of eco-friendly menstrual products in Himachal Pradesh. Using a descriptive mixed-method approach, data were collected from various sources. Findings reveal that MC Shimla lacks efforts to promote menstrual waste disposal awareness, and other departments focus on sanitary pads without addressing environmental impacts. Menstruation is addressed within broader programs, not exclusively. The study concludes that menstrual waste disposal is slow, and state strategies need improvement to reduce the environmental burden of plastic waste.

**Key Words:** *Menstrual Waste, Single-use plastic, Impact, Disposal Practices, Menstrual Hygiene Management & Environment.*

## Introduction

In India, 46.2 million women who menstruate use sanitary products, leading to the disposal of around 7 million such products each year. Due to inadequate infrastructure, the improper disposal of these products can result in both short-term and long-term health risks from chemicals like bleach and dioxin. Additionally, if these products are burned at temperatures below the required 800 degrees, harmful substances can be released into the soil and air (Green the Red). The disposal of menstrual products is a significant concern because it impacts user health and the environment. Many of these materials are non-biodegradable materials that harm ecosystems (HAFAl).

Census Report, 2011 reveals that 48.43% of the total population constitutes women, and an estimated 36% of the women of reproductive age use sanitary napkins and produce one billion used pads per month (Water Aid, 2019). Subsequently, National Family Health Survey-5 reported that in India, in the age group of 15-24 years, 64 per cent use sanitary napkins, 50 per cent use cloth, and 15 per cent use locally prepared napkins. Ministry of Drinking Water & Sanitation has figured out the data on menstrual waste load in India, indicating that 336 million women are experiencing menstruation and 121 million women are using sanitary pads; usually, eight sanitary napkins are used to manage the monthly cycle, which adds one billion menstrual waste monthly and 12 billion menstrual waste yearly. Accordingly, 12 billion menstrual waste is being disposed of differently, as 28% is disposed of in routine trash, 28% is thrown in the open, 3% is buried, and 28% is burnt in the open. Using hygienic menstrual products is closely associated with waste disposal because promoting disposable menstrual products without catering for the need for safe disposal management is detrimental to users and the environment.

Menstrual products include both disposable and reusable options, with choices depending on factors like availability, affordability, cultural norms, and personal preference. Disposable options include sanitary pads and tampons, while reusable options encompass cloths, handmade pads, cotton pads, and menstrual cups (Haver & Long, 2015). Commercial sanitary pads are typically made with super-absorbent material (SAP) and plastic adhesives, leading to decomposition times of 500 to 800 years. The presence of SAP prevents these absorbent materials from being compostable or biodegradable (Department of Drinking Water & Sanitation, Ministry of Jal Shakti, GoI). While the SWM 2016 guidelines stress the safe disposal of menstrual waste which includes blood and absorbent materials such as cloth, sanitary pads, and tampons to ensure the protection of users and the environment, it also outline specific treatment measures like sterilization, autoclaving, chemical treatment, and processing based on the nature of the

waste, whether it is compostable, incinerable, or recyclable (Muralidharan, 2018). Nonetheless, menstrual waste is the byproduct generated by women during their menstrual cycles throughout their reproductive years (Kaur et al., 2018).

On the other hand, the Women's Environmental Network (2018) report highlights that plastic is a major component in menstrual products, including strings, upper layers, wings, and wrapping. Approximately 90% of sanitary pads and up to 6% of tampons contain plastic, with the remainder made from wood. Materials like polyethylene and polypropylene, used in these products, do not decompose but can break into microplastics. Over a lifetime, a menstruating person discards around 200 kg of menstrual products, leaving a 5.3 kg carbon footprint (CO<sub>2</sub>) from burning these items. Additionally, chemicals used in the manufacturing process pose health risks and contaminate the environment.

Moreover, polyethylene plastic, commonly used in disposable pads and tampons, is not biodegradable and remains intact as it is not recognized by microorganisms. In landfills, the lack of light prevents photo-degradation, making it difficult for the plastic to break down into smaller pieces. Additionally, menstrual waste often accumulates on beaches, in public areas, and has even been found in the stomachs of Dead Sea birds (Peberdy et al., 2019). Thus, unsafe disposal practices of menstrual waste pose significant threats to users, sanitation systems, and the environment. These practices also endanger the health of sanitation workers who must clear sewer blockages caused by discarded sanitary pads and cloth. Moreover, when non-biodegradable waste is thrown into sewer lines, it adds synthetic materials that slow down the aerobic and anaerobic digestion processes of faecal matter, complicating the emptying and cleaning of sewer tanks (Elledge et al., 2018). Furthermore, the presence of super absorbent polymers, non-biodegradable plastic, and glue in disposable sanitary pads makes them non-compostable, and they can take hundreds of years to decompose. When these pads are discarded in fields or water bodies, they deteriorate water and soil quality, as blood-soaked products are ideal for pathogen growth. Consequently, untreated menstrual waste poses environmental harm by potentially creating a reservoir for pathogens (Ministry of Drinking Water & Sanitation, Government of India).

Despite the guidelines set forth by the Solid Waste Management Rules, 2016, Menstrual Health Guidelines, 2015, and the Swachh Bharat Mission (Urban and Gramin) including the ODF+ and ODF++ protocols, proper disposal of menstrual waste remains inadequate. These programs emphasize the importance of managing menstrual waste and advocate the use of incinerators for disposal. However, menstrual waste often ends up in landfills due to existing disposal

practices. It is frequently discarded with household or non-biodegradable waste, wrapped in newspapers or plastic, sometimes found near toilets, flushed down drains, thrown into water bodies, or burned in the open with other biomedical waste (Bhatt & Gupta, 2020). Additionally, the growing population, increasing income, and rapid consumption have led to a surge in menstrual waste, which often ends up in water bodies, is burned, or is left for waste collectors. By 2030, such practices are projected to contribute an additional 1,800 million tons of plastic and water. Now, the question arises: if women are the future of the economy, then how can the environment be saved, which would be resolved only if the disposal of menstrual waste is addressed (Lopez, 2020).

### Research Gap:

The government has introduced various programs to advocate for the efficient management and disposal of menstrual waste. However, the implementation of these guidelines remains insufficient and lacks effectiveness. Limited attention is given to educating menstruating women and girls about the chemical composition of menstrual products and their impact on health and the environment. No existing program specifically focuses on the informed choice of menstruating women and girls regarding the usage of menstrual material after knowing the differences between single-use disposable sanitary pads and reusable sanitary material, and their impact on health and the environment as well. This study emphasizes the need for discreet menstrual waste management to protect the environment and promote plastic-free menstruation. It also aims to inform future policies and programs centered on safe menstrual product choices and user consent.

### The Rationale of the Study:

Himachal Pradesh is the first state in India to ban single-use plastics and aims to become the country's first green state by using renewable and green energy by 2034 (Times of India, 2022). However, the large volume of disposable menstrual waste challenges the state's goal of being plastic-free, as NHFS-5 reports that 86% of women aged 15-24 in Himachal Pradesh use sanitary pads/napkins. The rising use of these pads raises concerns about the growing waste volume, which needs to be addressed from both menstrual hygiene (MHM) and sanitation perspectives. Ignoring menstrual waste could impede progress in MHM and have long-term health and environmental impacts (Bhatt & Gupta, 2020).

The study aims to address the lack of programs that differentiate between single-use disposable sanitary products and sustainable menstrual materials. This lack of distinction prevents menstruating women and girls from making informed choices about their menstrual products based on their impact. While the government provides free sanitary pads to those in

need, these initiatives do not adequately address the plastic pollution from single-use products or focus on menstrual waste management. There is a need for programs that prioritize health, safety, dignity, and pollution-free menstruation. This study examines the responsibilities and initiatives of line departments in managing menstrual waste, promoting plastic-free menstruation, and encouraging sustainable menstrual products.

### Objectives:

- To understand the responsibilities and initiatives of stakeholders' efficiency in managing menstrual waste.
  - To examine the role and initiative of stakeholders regarding the promotion of awareness among users regarding the adoption of safe disposal practices.
- Menstrual Waste and Framework.

### Methodology

The study employs a descriptive mixed research methodology. Quota sampling was used to collect data from Shimla District, representing the entire state. Primary data was gathered through questions about menstrual waste handling, disposal practices, and awareness initiatives. Secondary data came from reports, articles, websites, regulations, and policy documents.

### Findings of the Study:

To achieve the objectives of this study, a semi-structured interview schedule and detailed discussions were conducted. Various questions were asked about initiatives, current disposal practices, and awareness efforts. Based on the responses, conclusions were drawn. A concerned official/officer from Municipal Corporation Shimla revealed that there are 131 public and community toilets, with 31 operating on a pay-and-use model at a fee of 5 Rupees, while the rest are community toilets. Thirteen of these pay-and-use toilets have vending machines and red bins for menstrual waste disposal. Sulabh International manages the cleanliness of these toilets under an agreement with Municipal Corporation Shimla for a fee of 2.44 lacs. Regarding waste segregation, the officials indicated that since COVID-19, the Municipal Corporation Shimla has not segregated waste according to SWM, 2016 guidelines. Regarding the current practice of all types of collected waste disposal, the official highlighted that MC Shimla is utilizing the RDF (Refuse Derived Fuel) technique that involves separating collected waste with a magnetic separator to isolate metal-based waste. The remaining waste is then chopped using a cutter, followed by homogenization. The waste is subsequently dried using a dryer to reduce moisture content, and finally, it is converted into fuel, which is then handed over to the cement industry,

“Ambuja”. However, there is no dedicated disposal method specifically for menstrual waste.

Furthermore, currently, MC Shimla is not conducting any awareness campaigns on menstrual waste disposal. The official acknowledged that the topic is often treated as a taboo, making it difficult to discuss openly. This raises questions about how menstruating women and girls are expected to adopt safe disposal practices if they are not being informed. Moreover, with waste segregation not being practiced and all waste being processed through the RDF technique, there is concern about whether this approach aligns with the SWM, 2016 guidelines, which mandate the incineration of menstrual waste at specific temperatures to minimize the release of dioxins and furans.

In addition, during a detailed discussion, the official emphasized that the Pollution Control Board (PCB) is responsible for monitoring and ensuring that incinerators installed in the jurisdiction of Municipal Corporation Shimla operate at the appropriate temperatures to safely burn menstrual waste or not. The official also revealed that maintaining a high combustion temperature, necessary for the effective burning of sanitary pads, typically requires the use of electricity, diesel or LPG. However, there is a doubt that vendors responsible for sanitation services may not maintain these high temperatures to reduce fuel costs, leading to increased pollution.

Additionally, insights were gained regarding waste collectors' comfort in handling menstrual waste, any complaints they may have expressed, and the extent of collaboration between the Shimla Municipal Corporation and other departments in promoting menstrual hygiene management. Nonetheless to say that the Shimla Municipal Corporation is not currently collaborating with other departments or NGOs in the area of menstrual waste management. Additionally, waste collectors have occasionally reported discomfort in handling menstrual waste. Moreover, vendors from Sulabh International, who manage the sanitation and cleanliness of toilets in Shimla city, often complain that women and girls flush their menstrual waste into toilets, causing blockages in the sewer lines. These blockages are difficult to clear, and vendors expressed frustration over having to spend Rs. 5000/- to unblock the sewer lines with the help of sewer workers. These facts highlight that menstruation remains a taboo subject, with the critical components of access to proper knowledge and facilities for safe disposal still largely unaddressed.

While gathering data on stakeholders' initiatives for menstrual waste management and disposal, including National Health Mission, Women and Child Development Department, H.P. State Pollution Control Board, and the Directorate of Education, the focus was on their efforts to enhance menstrual hygiene management (MHM), water, sanitation, and

hygiene (WASH) in schools and communities, as well as their observation regarding the knowledge and attitudes of menstruating women and girls. The data also covered observed beliefs and the roles of community health workers, NGOs, and health practitioners in promoting menstrual health and safe disposal. Officials from the Women and Child Development Department stated that no specific scheme is solely dedicated to menstrual hygiene management. Their current program, “Won Din,” incorporates menstrual hygiene as one of its modules, along with “1000 Days of Children” and “Anemia.” They highlighted challenges in engaging NGOs and social workers due to financial constraints, as NGOs are reluctant to work without payment. The program mainly aims to increase awareness about sanitary pad use to prevent unhygienic practices, but has not yet promoted eco-friendly products due to concerns about confusing the target audience. Moreover, awareness is primarily spread through Aganwadi workers and supervisors. There are issues with male teachers' discomfort discussing menstruation, with some being cooperative and others refusing to participate. One supervisor reported facing societal comments while she was conducting awareness program in co-ed school (“**Kya galaye kero ye essa jo chup karoyo**” meaning “**What is she saying tell her to keep mum.**”) and resistance from schools about mixed-gender sessions on menstruation. The official noted that menstrual products have become a status symbol, overshadowing health and environmental concerns. At workplaces, inadequate disposal facilities and stigma from male colleagues further complicate the situation. The official stressed that mothers should be primary educators on menstrual hygiene and stressed for a comprehensive program to address menstrual hygiene and disposal challenges.

A similar result emerged from the interview with the National Health Mission representative. The official stated that there is currently no dedicated scheme or program for menstrual health and hygiene management. Instead, menstrual hygiene is addressed through the adolescent health component of the Rashtriya Bal Swasthya Karyakram (RBSK) program, which sensitizes girls aged 10-19. Despite the sensitivity of the topic, awareness efforts are gaining traction, and the NFHS-5 report shows that 86% of young women aged 15-24 use sanitary pads. The department distributes packets of six sanitary pads for one rupee through ASHA Workers to girls from 6th to 12th grade, acknowledging that this is insufficient for an entire menstrual cycle but serves as social marketing. The department procures sanitary pads through a tender process due to the lack of local production facilities in Himachal Pradesh. Awareness is promoted via advertisements, radio jingles, souvenirs, and bus stand panels. Resource persons like ANMs (Auxiliary Nurses and Midwife) and ASHA (Accredited Social Health Activists) workers are



trained in menstrual hygiene, but no NGOs are involved in this initiative. The department is not currently focusing on promoting eco-friendly menstrual products, such as menstrual cups. These products may be beyond the purchasing power of many users and face cultural and social acceptance barriers. Additionally, menstrual cups may be inconvenient for women in hilly terrains, as they could cause discomfort during physical activity or work. The official advocated for a need of a holistic program to address menstrual health needs and encourage the use of biodegradable menstrual pads.

Subsequently, the Directorate of Education regarding the collaboration with NGOs and community workers regarding the awareness of menstrual hygiene revealed that none of the NGOs, community workers etc. are participating in this agenda. They also do not have any specific program for menstrual health hygiene and disposal of menstrual waste but they are only sensitizing adolescent girls about menstruation under the school health and wellness program.

Finally, data regarding the checks and supervision of incinerators were obtained from the H.P. State Pollution Control Board, which concluded that there are no routine checks on carbon emissions from small-scale incinerators due to a shortage of manpower; inspections are only conducted if a complaint is received. They noted that Municipal Corporations should oversee incinerators installed in their jurisdiction. Additionally, there are four Biomedical Waste Treatment Facilities located in Solan, Kangra, Una, and Bilaspur, where biomedical waste generated within a 75 km radius is incinerated. These facilities, established by private operators, require hospitals to dispose of their biomedical waste there under agreements that involve fees. The H.P. State Pollution Control Board monitors the air and water quality by taking samples according to the Central Pollution Control Board Guidelines, 2016, and ensures that waste disposal follows the Biomedical Waste Management Rules, 2016, at these treatment plants.

### Conclusion:

The study concludes that menstruating women and girls require access to accurate, comprehensive, and impartial information about various menstrual products along with their respective benefits and drawbacks to make informed choice that support both reproductive health and environmental sustainability. Raising awareness on menstrual health and encouraging the adoption of biodegradable products through government-led initiatives is vital. Such efforts can stimulate local production, create employment opportunities for women, and empower them to make better personal choices. Currently, no dedicated department or program in Himachal Pradesh addresses menstrual health and hygiene, and safe disposal practices remain largely inaccessible. Moreover, to address the health and environmental risks linked to disposable sanitary pads, it is essential

to promote hygienic, comfortable, affordable, and eco-friendly alternatives (WaterAid, 2019). Yet, no active initiatives by relevant departments have been reported in the state. UNEP (2021) recognizes menstrual protection as a human rights concern and emphasizes the importance of consumer awareness regarding the health and environmental consequences of single-use menstrual products. Policymakers must ensure that the procurement and disposal of such products align with sustainability goals. However, this study reveals a lack of awareness and limited availability of sustainable menstrual alternatives in Shimla, Himachal Pradesh where 90% of women reportedly use sanitary pads without adequate guidance on safe disposal. This gap poses a significant challenge to the state's vision of becoming India's first green state by 2034 (Times of India, 2022). Notably, the current Chief Minister has revised the goal to position Himachal Pradesh as the first green energy state by 2025 (Times of India, 2023).

### Conflict of Interest:

The author(s) confirm that no funding was received for this study. All author(s) contributed equally to the study's design, writing, and editing. The author(s) also declare no conflicts of interest related to this work.

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