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SUSTAINABLE MENSTRUAL WASTE MANAGEMENT IN COASTAL AREA OF BANGLADESH: ADDRESSING ENVIRONMENTAL AND PUBLIC HEALTH CHALLENGES

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ABSTRACT

Disposal of menstrual waste is an important but often neglected area of public health and environmental sustainability in Bangladesh. Traditional disposal methods such as burning or burying (disposing of menstrual products in a body of water or an open area) pose significant health risks and environmental problems. This study examines sustainable and innovative approaches to managing menstrual waste with the aim of improving both health outcomes and environmental sustainability. Using a mixed methods approach, the research includes both qualitative and quantitative data collection, including questionnaire surveys, key informant interviews (KIIs) with stakeholders from non-governmental organizations (NGOs), local government officials and community leaders, and focus group discussions (FGDs) were conducted with women and girls from different socio-economic backgrounds conducted to understand their menstrual hygiene practices and challenges. The survey was conducted among 200 households (women and girls) between the ages of 10 and 45. The result of the disposal system showed that throwing into the river and throwing into trash accounted for 65%, burying accounted for 47%, and burning accounted for 22%. The study also identified challenges such as cultural taboos, inadequate infrastructure and limited access to affordable biodegradable products. Sustainable disposal of menstrual waste in Bangladesh is achievable through community engagement, education and the use of biodegradable materials. Overcoming cultural barriers and improving infrastructure are critical to long-term success. After this research is completed, this research will continue to be selected communities to test sustainable waste management solutions, such as biodegradable and reusable hygiene products (e.g. menstrual cups and cloth pads), as well as community-run waste separation and composting systems. This study will find the result in a significant reduction in menstrual waste and demonstrate the effectiveness of biodegradable products and proper waste separation practices. Community engagement and education will be the key factors in the success of this study as they raise awareness and promote acceptance of sustainable practices.

INTRODUCTION

Menstrual hygiene management (MHM) has become a major public health problem worldwide (Patel et al., 2022). Poor MHM is not only associated with negative health and psychosocial consequences, but also has social and cultural impacts that affect the quality of life of women of childbearing age (Rossouw, 2021). In coastal areas of Bangladesh, particularly in Mongla, sustainable disposal of menstrual waste is a critical issue that links environmental and public health challenges (Share-Net Bangladesh, 2024). Traditional menstrual practices, such as the use of cloth pads, often lead to improper disposal and hygiene issues, exacerbating health risks such as infections and reproductive health problems (Sagar, 2023). Additionally, the environmental impact of menstrual waste contributes to environmental pollution and affects local ecosystems and water sources (Sagar, 2023). The lack of sustainable waste management practices exacerbates pollution, threatens marine ecosystems and affects the well-being of local communities. Menstrual waste, often made of non-biodegradable materials such as plastic and synthetic fibers, accumulates in landfills and waterways, causing serious ecological consequences (Wilmouth et al., 2018).

Good menstrual hygiene practices mean that women and adolescent girls use a clean menstrual management material to absorb or collect menstrual blood, which can be changed in privacy as often as necessary during the duration of a menstrual period, using soap and water to wash the body as needed and access to safe and convenient facilities for disposal of used menstrual management materials (Elledge et al., 2018). Poor menstrual hygiene management (MHM) can negatively impact

the health and psychosocial well-being of women and girls. Menstrual hygiene management in the water and sanitation sector is not officially defined in the Sustainable Development Goals (SDGs). SDG3 (physical health and psychosocial well-being for women and girls), SDG4 (quality education for girls), SDG5 (gender empowerment and equality), SDG6 (water and sanitation) and SDG12 (environmentally responsible consumption and production) (Elledge et al., 2018).

In addition to environmental concerns, inadequate disposal of menstrual waste affects the health and dignity of women and girls (Maknun et al., 2017). Limited access to safe disposal options forces many to resort to unsafe practices, increasing the risk of infections and other health problems. The stigma associated with menstruation further complicates efforts to address these challenges by hindering open discussions and implementation of effective solutions (Elledge et al., 2018).

The aim of this study is to investigate sustainable and innovative approaches to managing menstrual waste with the aim of improving both health outcomes and environmental sustainability. By examining current practices and identifying key barriers, this research aims to contribute to the development of comprehensive strategies that ensure environmental sustainability and improve the quality of life of women and girls in the region. The results will provide valuable insights for policymakers, health care providers, and community leaders striving to create a cleaner, healthier, and more equitable environment.

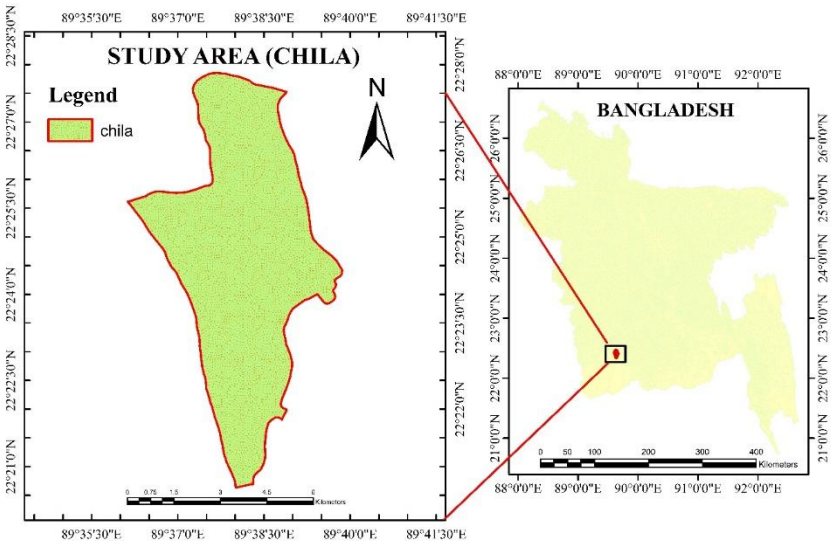
METHODOLOGY

Research Design

The study on sustainable management of menstrual waste in coastal areas of Bangladesh, particularly Mongla, used a mixed methods approach. This design integrated both quantitative and qualitative research methods to provide a comprehensive understanding of current practices, challenges, and potential solutions related to menstrual waste disposal.

Study Area

The study area covers the eastern part of Bagerhat district including one union of Mongla upazila and geographically the area is limited to latitudes 22°20'N to 22°40'N and 89°30'E to 90°00'E which are mainly are formed by the deposition of Late Holocene to Recent sediments transported by the Ganges, Brahmaputra and Meghna rivers. Among all the upazilas of Bagerhat district in the study area, Mongla is the largest upazila. The population of the study area is about 60561. The annual average temperature is a maximum of 36.56 °C and a minimum of 24.36 °C. The annual average rainfall is 1850 mm. The study area is well served by a dense river network.



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Data Collection Methods

Quantitative Methods

Surveys: A structured questionnaire was prepared to a representative sample of women and girls in Mongla to collect data on menstrual hygiene practices, disposal methods and related health problems. The surveys included questions about the availability and use of sanitation facilities.

Qualitative Methods

In-Depth Interviews: Semi-structured interviews with key informants including health care providers, local government officials, and environmental experts. These interviews provide insights into the challenges and opportunities for sustainable menstrual waste management in Mongla.

Focus Group Discussions (FGDs): FGDs organized with women and adolescent girls to explore their experiences, beliefs and perceptions regarding menstrual hygiene and waste management. These qualitative data help to understand the social and cultural factors that influence menstrual practices.

Figure 2 During a focus group discussion with women and girls in West Chila

Sampling Strategy

Sample Size and Selection: A stratified random sampling technique used to ensure representation of diverse socio-economic backgrounds, age groups and geographical locations within the Chila union. The sample size is determined based on the population size and the confidence level required for the statistical analysis.

Data Analysis

Survey data is analyzed for correlations using statistical software (Microsoft Excel). Descriptive statistics and regression analysis are used to interpret the data. Thematic analysis is used to analyze qualitative data from interviews and FGDs. Transcripts are coded and categorized by theme to identify key insights and narratives related to menstrual waste disposal.

Ethical Considerations

Informed Consent: All participants were informed about the purpose of the study, their rights and the confidentiality of their answers. Written or oral consent will be obtained before participation.

Confidentiality: Personal information collected during the research was kept confidential and used solely for the purposes of this study. Data is anonymized to protect the identity of participants.

Cultural Sensitivity: The research was conducted with cultural sensitivity and consideration of local customs and practices. Researchers were committed to facilitating interviews and discussions with women and girls.

By employ using a mixed- methods approach, this research aims to provide a holistic understanding of menstrual waste management in Mongla and contribute to the development of sustainable and culturally appropriate solutions.

RESULT AND DISCUSSION

Results

The study on sustainable disposal of menstrual waste in Mongla revealed several key findings regarding current practices, environmental impacts and public health outcomes.

Current Practices and Disposal Methods

Menstrual Product Usage: Most respondents (50%) said they used old clothes, while 40% used sanitary pads and the remaining 10% used other alternatives such as tissues.

Disposal Methods: Among those who used pads, 42.5% disposed of them in the waterbody (river), 22.5% throwing in the trash, 11.1% burned, and 23.5% disposed by burying the menstrual materials. The old clothes were predominantly washed and reused, often in unsanitary conditions as access to clean water and proper sanitation was limited.

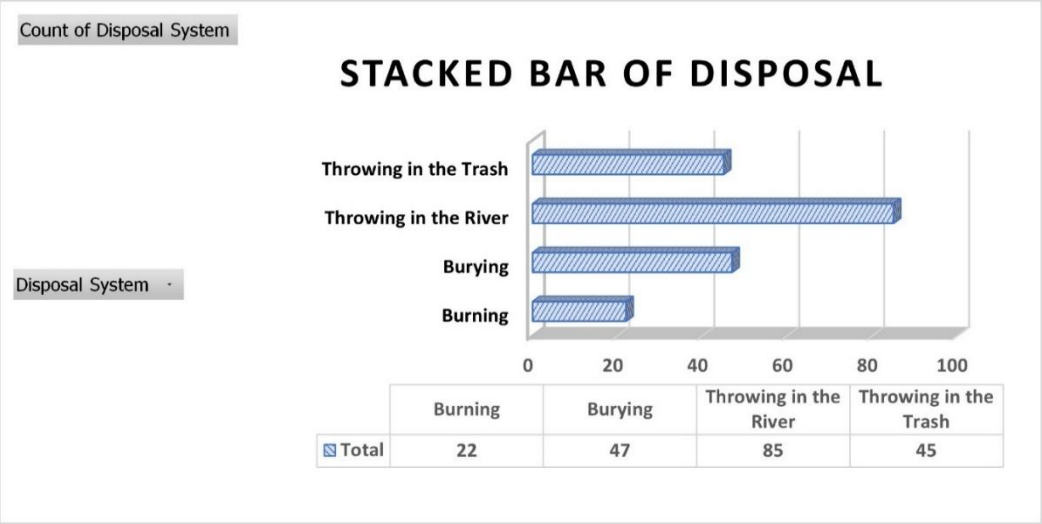

Figure 3 Stacked Bar of Menstrual Hygiene Management Materials Disposal System

Figure 3 shows that the stacked bar of disposal system in Chila Union, Mongla where total participants was 200, 85 women and girls dispose their menstruation materials by throwing in the river, 47 burying, 45 throwing in the trash and 22 burned.

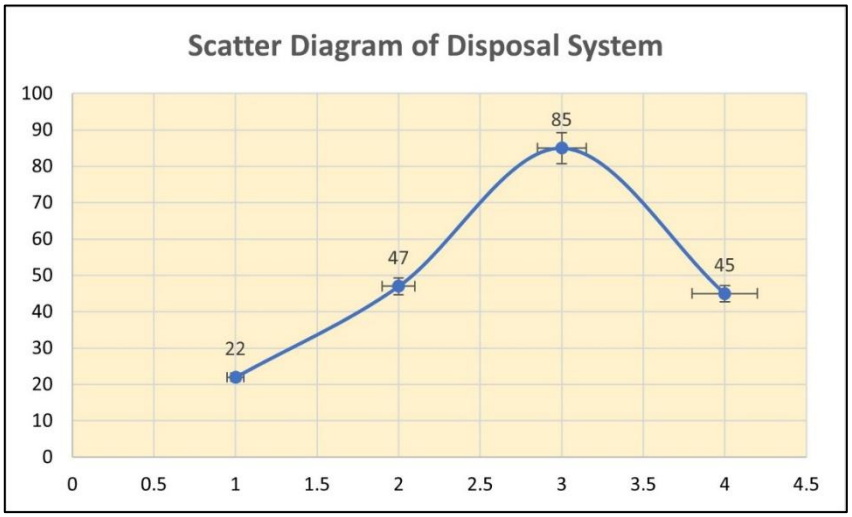

Figure 4 Scatter Diagram of Menstrual Hygiene Management Materials Disposal System

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The above information is shown in the scatter diagram of the disposal system. Here, 22 is the lowest value and 85 is the highest value of counting disposal system of menstrual waste in Chila union. The Waste Material Disposal System of Menstrual Hygiene Management in Chila Union, Mongla among 200 (Women and Girls) Questionnaire Survey.

Environmental Impacts

The investigation revealed significant contamination of water sources and soil due to improper disposal of menstrual waste. High levels of plastics and chemical pollutants have been found in areas where sanitary napkins are commonly thrown away. Burning sanitary napkins contributed to air pollution and released harmful toxins and greenhouse gases. The open dumping of menstrual waste resulted in visible accumulations of waste in public spaces and waterways.

Public Health Outcomes

Health Risks: A high prevalence of infections, including urinary tract infections (UTIs) and reproductive tract infections (RTIs), has been reported in women who used old cloths in unsanitary conditions. Women who disposed of or burned sanitary napkins outdoors also suffered from respiratory problems due to exposure to pollutants.

Awareness and Education: The study highlighted a lack of awareness about the health risks associated with improper disposal of menstrual waste. Many respondents expressed the need for better education and resources for safe menstrual hygiene.

DISCUSSION

The results of this study highlight the urgent need for sustainable solutions for menstrual waste management in Chila Union, Mongla. Although the predominant use of old clothing is environmentally friendly, it is often compromised by unsanitary conditions, leading to significant health risks. On the other hand, the use of sanitary napkins contributes to environmental pollution through improper disposal methods such as open dumping and burning or throwing into water bodies.

Impact on the environment and health Improper disposal of menstrual waste has far-reaching impacts on the environment and health. The presence of plastics and chemical pollutants in water and soil not only affects local ecosystems but also poses risks to human health. Air pollution from burning sanitary napkins further exacerbates the population's respiratory illnesses.

Need for Sustainable Alternatives There is an urgent need to promote sustainable alternatives that address both environmental and health concerns. Menstrual cups, which are reusable and produce little waste, could be an effective solution. However, cultural acceptance and education about their use are critical to widespread adoption. Additionally, the development of biodegradable sanitary pads could reduce environmental pollution while providing a safe and hygienic option for women.

Community engagement and education Community engagement and education are important components of sustainable menstrual waste management. Raising awareness of the health risks associated with improper menstrual hygiene and waste disposal practices can empower women to make informed decisions. Educational programs should focus on the safe use and disposal of menstrual products and the benefits of sustainable alternatives.

Policy and infrastructure support Government and local authorities have a critical role to play in supporting sustainable management of menstrual waste. Policies that promote the use of biodegradable products, incentivize sustainable practices, and ensure access to clean water and sanitation are essential. Additionally, infrastructure improvements, such as establishing waste management systems for menstrual products, can reduce pollution and improve public health outcomes.

CONCLUSION

Research on sustainable disposal of menstrual waste in the coastal area of Mongla, Bangladesh highlights the significant environmental and public health challenges posed by current menstrual hygiene practices. The frequent use of sanitary napkins and old clothes as well as inadequate disposal methods contribute to environmental pollution and health risks. High levels of pollutants in water and soil as well as respiratory problems caused by the burning of menstrual waste highlight the urgent need for innovative solutions.

To address these challenges, the study highlights the importance of promoting sustainable alternatives such as biodegradable sanitary pads and menstrual cups. These alternatives not only reduce environmental impact but also improve menstrual hygiene and women's health outcomes. Community engagement and education are critical to promoting awareness and acceptance of these

sustainable practices. Educational programs should focus on safe menstrual hygiene management and the benefits of environmentally friendly products.

Additionally, policy support and infrastructure development are essential to ensure the success of sustainable menstrual waste management initiatives. Government agencies and local organizations must work together to enforce stricter regulations, incentivize sustainable practices, and improve access to sanitation. Establishing effective waste management systems for menstrual products can reduce environmental pollution and improve public health.

In conclusion, a holistic approach that considers environmental, health and social aspects is necessary to achieve sustainable management of menstrual waste in Chila union, Mongla. By addressing these challenges through education, policy and community engagement, the region can work towards a more sustainable and healthy future for its women and the entire environment. This research provides a basis for further studies and practical interventions to improve menstrual hygiene management and environmental sustainability in coastal areas of Bangladesh.

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