



ROLE OF INDIGENOUS WISDOM AND TECHNOLOGIES IN SUSTAINABLE MENSTRUAL HYGIENE MANAGEMENT IN RURAL TAMIL NADU

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ABSTRACT

Sound menstrual hygiene management programs initiated by the Tamil Nadu government and academic institutions helped girls and women adopt advanced menstrual hygiene practices. MHM serves as a critical multi-access interface for sociocultural, gender equity, environmental sustainability, and public health. The menstrual practices related to product choice, reuse, and disposal have been influenced by the traditional knowledge and practices of indigenous women in Tamil Nadu, India. On the other hand, as the use of disposable menstrual products and centralised waste management has increased, questions of affordability, environmental sustainability and women's informed choice have arisen.

This study examines ways to integrate indigenous knowledge with inclusive, sustainable technologies to achieve women's empowerment and sustainable menstrual hygiene management. The study is based on primary data gathered in Tamil Nadu using a mixed qualitative methodology that included focus group discussions (8 FGDs), in-depth interviews (n = 36), and a structured survey (n = 320), all conducted in rural, semi-urban, and urban settings. Women prefer comfortable hygiene products, easy disposal methods, and engaging awareness programmes from educational institutions and healthcare systems on MHM.

The study's outcomes reveal that, especially in locations where access and affordability are limited, menstrual decisions are still influenced by indigenous practices and regionally established information. Cooperative-led programs and institutional awareness campaigns support reusable pads and biodegradable items and are examples of inclusive technologies that are more widely embraced. The study makes the point that policy frameworks that integrate inclusive technology into institutional and cooperative structures and value indigenous knowledge as a valuable resource are important for sustainable MHM.

The paper illustrates policy frameworks that integrate inclusive technologies into institutional and cooperative structures and acknowledge indigenous understanding as a valuable resource, both of which are mandatory for sustainable MHM. It is in line with the SDGs 3, 5, 12, and 13.

KEYWORDS: Menstrual Hygiene Management; Indigenous Knowledge; Inclusive Technologies; Sustainability; Women's Empowerment; Tamil Nadu

1. INTRODUCTION

The Menstrual Hygiene Management (MHM) is a central theme in the world health and development agenda. It addresses the dignity, health and sanitation systems of women. The Tamil Nadu State government in India has implemented several plans to improve menstrual health, often noted for their comprehensiveness and interdepartmental coordination. The National Health Mission (NHM) programs and institutional initiatives on hygiene are designed to expand access to menstrual products and hygiene education in both rural and urban regions. However, aspects of the policies, such as environmental sustainability, affordability, and culturally relevant methods, have not yet been fully addressed. Menstrual practices in indigenous knowledge have been influenced by factors such as the materials used, disposal methods, and support systems. It is paramount to study the relationship between official programs and local practices, as commercial menstrual products have replaced them. In this study, indigenous menstrual practices are perceived as a repository of knowledge that could influence inclusive and sustainable MHM approaches.

2. REVIEW OF LITERATURE

2.1 Managing Menstrual Hygiene and Public Health: Research highlights the significance of the mental and physical well-being of women during menstruation, specifically in rural areas. It is thoroughly linked with health education, access to water, and sanitation (UNICEF, 2019; WHO, 2022). Inferior MHM practises can lead to adverse outcomes like social isolation, missing school days, and reproductive tract infections, particularly in low- and middle-income countries (Sommer et al., 2015). Studies show that in India, menstrual taboos and a lack of knowledge still exist, despite more products being accessible and available (Sahoo et al., 2015).

2.2 Strategies for enhancing MHM in Tamil Nadu and India: In India, initiatives on menstrual hygiene led by the government, keenly focus on distributing the menstrual products and raising awareness on menstrual hygiene practises questions are waiting for the answers on the sustainable disposal methods of menstrual products, National Health Mission (NHM) programs and initiatives from educational institutions have shown improved access from the evaluations (Van Eijk et al., 2016).



The free sanitary napkin distribution programs in Tamil Nadu are often perceived as successful. However, researchers report ongoing challenges with disposal techniques, product quality, and the appropriateness of these programs for local needs (TNUSSP, 2019).

2.3 Menstrual Traditions, Sustainability, and Indigenous Knowledge: Feminist and sustainability research underlines the inclusion of indigenous knowledge for sustainable health practices from the lived experiences of women (Agarwal, 2010). Studies on traditional menstrual hygiene practices reveal that puberty and school absenteeism are closely linked, and that rural women prioritise reusable materials, continuous care, and participation in knowledge-sharing activities within communities (Jewitt & Ryley, 2014). Even though these practices are well-tailored to the principles of the green environment and the circular economy, they frequently go unrecognised in formal policies.

2.4 Women's Empowerment and Inclusive Technology: Including women in health decisions can be widely enhanced by adopting accessible, affordable, and culturally appropriate technologies, and women can be the co-creators and not only the users (Heeks et al., 2014). Despite increasing access to a variety of biodegradable menstrual products that empower women in MHM, particularly when supported by cooperatives and self-help groups, persistent socio-cultural taboos surrounding menstrual hygiene practices persist (Kaur et al., 2020). Still, these models are rarely considered for integration into state policy. Additionally, there is a notable gap in research on integrating indigenous knowledge, inclusive technologies, and policy frameworks to formulate sustainable MHM, particularly at the state level in India.

3. PROBLEM STATEMENT

Tamil Nadu has made several moves toward menstrual hygiene, though most current MHM approaches still focus on single-use sanitary pads. This is pretty concerning about how traditional menstrual practices are often overlooked, the long-term costs, and the impact on the environment. Centralised waste management is not well-equipped to handle the growing volume of menstrual waste, especially in rural and semi-urban areas. Additionally, women's actual preferences or experiences were overlooked in the policy framework and decision-making processes, leading to inconsistent use and limited choices available. The lack of a solid way to integrate inclusive and sustainable menstrual technologies into existing frameworks limits the potential for meaningful, eco-friendly, and empowering MHM solutions. To address this issue, we need research that explores how proper integration of inclusive technologies and traditional knowledge into Tamil Nadu's MHM policies and practices is required.

4. OBJECTIVES OF THE STUDY

The specific goals of the study are:

To investigate the traditional menstrual knowledge and customs of Tamil Nadu women.

To understand the women's preferences and decision-making about menstrual hygiene products.

To promote the better practises of menstrual hygiene management (MHM) among rural women by highlighting the pivotal role of inclusive and sustainable technologies.

To understand the need to avail increased contribution of institutional and cooperative frameworks in advancing the support for sustainable MHM.

To suggest advanced policy directions that go hand in hand with sustainable development goals regarding women's health, environmental protection, and inclusive technologies.

5. METHODOLOGY

To capture the complexity of women's menstrual hygiene practices and decision-making processes, the study adopts a qualitative research design to gain a deep understanding of lived experiences and to identify current trends and broader patterns across different social and geographic contexts.

The qualitative component forms the core of the study by including in-depth interviews, focused group discussions, and informal narrative interactions, which helped explore women's perceptions, beliefs, and indigenous knowledge systems related to everyday practices of menstrual hygiene management. To understand sensitive issues such as stigma, cultural taboos, product preferences, and access constraints, these methods proved highly useful.

To enable a holistic understanding of menstrual hygiene management practices in Tamil Nadu, the study adopts an in-depth qualitative methodology. It provides a robust foundation for acquiring context-specific and policy-relevant conclusions.

6. CONCEPTUAL FRAMEWORK

The study elaborates on MHM as a multi-access interface that connects various aspects, such as sociocultural beliefs and norms, gender equity, and women's empowerment, with environmental sustainability and public health systems. Taking advantage of indigenous knowledge, inclusive technologies, and institutional frameworks such as cooperatives, healthcare, and educational institutions to frame regulations related to MHM practices is the core of the study. We talk about affordable, accessible, culturally appropriate, and environmentally friendly solutions for MHM practices by partnering with inclusive technologies, thereby enhancing women's choices and dignity. The framework emphasises the inevitable need and importance of aligning policies between traditional knowledge and present-day institutional systems.

7. FINDINGS AND DISCUSSION

7.1 Women's Preferences and Awareness

The research shows that women prioritise comfort, safety, and ease of disposal when it comes to menstrual products. To make informed choices about menstrual hygiene products, awareness programs offered in schools, colleges, and healthcare institutions play a vital role in supporting women. However, their effectiveness and reach can vary widely from one region to another.

7.2 Role of Indigenous Knowledge

In many rural areas without access to commercial products, traditional practices still heavily influence choices about menstrual hygiene products. These traditional methods focus on reusable materials, natural absorbents, and conscious disposal of used products. Mostly, women find a way to combine the indigenous knowledge with the trendy products for comfort, rather than completely turning away from modern options.



7.3 Inclusive and Sustainable Technologies

The inclusive solutions are eco-friendly, breathable pads, biodegradable menstrual products, and sustainable waste management for used menstrual products. Encouraging community-led production and distribution will improve affordability and develop a sense of local ownership and accountability. To help build acceptance and trust in these options, institutional campaigns will further demonstrate their support for them. All of this contributes to a stronger community engagement and to reducing the environmental footprint.

8. RELEVANCE OF POLICY FRAMEWORKS AND INSTITUTIONAL ASSOCIATIONS

The study results culminate in the importance of formulating policy frameworks that:

- Bridges the gaps by inclusive menstrual technologies into co-ops and other institutions in MHM practises.
- Advocate decentralised techniques for production and waste management related to MHM products.
- Accept indigenous knowledge as a valid and important resource, especially in dealing with waste management and cultural points.
- Implement relentless skill-upscaling and awareness programs and initiatives specifically in rural areas concerned with MHM. These combined efforts can strategically address environmental challenges and protect the environment while also enhancing women's empowerment and their choices regarding MHM products and better practices.

9. ALIGNMENT WITH SUSTAINABLE DEVELOPMENT GOALS

Support for Sustainable Development Goals.

SDG 3: MHM products and physical and mental health.

SDG 5: Overcoming menstrual stigmas in order to empower women and have equal gender opportunities.

SDG 12: Promoting responsible consumption and production trends, particularly in MHM.

SDG 13: promoting biodegradable and environmentally-friendly products to minimise pollution and solid waste.

10. CONCLUSION

Sustainable menstrual hygiene management offers a customary approach that honours traditional knowledge and integrates and contextualises technological advancements. The combination of traditional knowledge systems, institutional forms of cooperation, and state-driven programmes in Tamil Nadu is an effective avenue to environmentally sustainable and socially enabling solutions to menstrual hygiene. The key lies in long-term sustainability, equity, and the dignity of menstrual health management by recognising women not only as beneficiaries but as change agents. Period calendar applications are those that industries develop to predict periods, help users mentally prepare, and carry menstrual hygiene products. The stakeholders can promote the use of such applications among rural and semi-urban girls. To ensure proper nutrition during the menstrual period, which may make young girls more inclined to use technology, the health and family welfare department may develop applications with a checklist of what to consume to maintain good health.

In that regard, it is inevitable to reinforce menstrual waste management facilities. Provision of standardised incinerators in schools, Primary Health Centres (PHCs), hospitals, and other government departments to facilitate the safe disposal of used menstrual products in an environmentally safe way is an option the government may consider. Moreover, laws can be enacted requiring every business establishment that employs women to provide proper menstrual waste disposal systems, such as incinerators, at the workplace. Failure to comply with such regulations is expected to result in well-defined sanctions to safeguard accountability, environmental conservation, and occupational health compliance. Together, these steps would play a significant role in enhancing the sustainable management of menstrual hygiene and in bringing together public health and environmental management goals with the Sustainable Development Goals 3, 5, 12, and 13.

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