

## Research Article

# Managing the Menstrual Hygiene, A Problem in Rural, Peri-Urban and Sub-Urban Areas in India

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## Abstract

It is observed that around 1.8 billion people across the globe menstruate every month. In India, especially in rural and peri-urban areas or in slums while menstruating, women face problems such as cultural taboos, lack of basic services like toilets and menstruating health hygiene and many more. The paper highlights the problems faced by women in low- and middle-income societies. The assessment includes interviewing women across 7 states (spread across east, west, north, south and central part of India) including the states of Madhya Pradesh, Orissa, Bihar, Andhra Pradesh, Maharashtra, Rajasthan and Uttar Pradesh focussing on (a) products or material used by them (b) problems faced by them related to health (c) ways of disposing (d) other problems related to their performance. Studying about Super-absorbent Polymer, oxo-biodegradable plastic with the objective of proposing economical sanitary napkins for the women with reduced prices to about 70% to 85%. The paper also discusses, redefining the social system in rural and peri-urban India towards a healthy lifestyle which is affordable.

**Keywords:** Informal economy; Menstrual Cycle; Menstrual Hygiene; Sanitary Napkins Women; Super Absorbent Polymers

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## Introduction

Menstruation is the regular bio physical phenomenon by virtue of which blood and mucosal tissue from the inner lining of the uterus are discharged of through the vagina. The menstrual cycle is considered by the rise and fall of hormones. Menstruation is a sign that pregnancy has not occurred. To endure safe and dignified menstruation is a primary necessity for women and girls. Millions of girls and women are unable to manage their menstrual cycle in a dignified and healthy way. The concern is largely with the reliability of the traditional products which are used in low- and middle-income societies. Patriarchal society with prejudiced norms, economic backwardness, lack of awareness or education and dearth of basic hygiene needs like toilets and sanitary products add to unrest towards menstrual health and hygiene [1].

WHO/ UNICEF in their Joint Monitoring Programme 2012, mentioned menstrual hygiene management as, usage of safe, reliable and hygienic menstrual management material used to absorb or collect menstrual flow. The material should empower the user so that it can be changed in privacy as often as necessary. It should be convenient to use and can be managed with dignity and without discomfort or fear [2].

There is a term called period poverty. It entails deprivation towards access to menstrual materials/ stuffs, education as well as awareness, hygiene amenities and trash management either individually or many a times multiple factors together. It affects an estimated 500 million people worldwide [3].

In India there is over 670 million women across different age groups living in urban, peri-urban and rural areas. Out of 110 million women, aged between 15 years to 24 years, 50 percent of them use cloth during menstruation [4-6].

According to the National Family Health Survey in India 2020-21, the states with the low percentage of women using hygienic methods of menstrual protection (Locally prepared napkins, sanitary napkins, tampons, and menstrual cups are considered to be hygienic methods of protection) are Bihar (30%-59%), Orissa (30%-59%), Madhya Pradesh (30%-59%), Andhra Pradesh (65%-80%), Maharashtra (52%-69%), Rajasthan (30%-59%) and Uttar Pradesh (30%-59%) [7].

Poor menstrual hygiene, however, can pose serious health risks, like reproductive and urinary tract infections which can result in future infertility and birth complications. Women who lack female-friendly sanitation facilities in the workplace lose wages for days of work missed during menstruation and are viewed as unreliable workers, diminishing options for advancement.

The objective of the paper is to highlight the problem faced by women engaged in informal economy largely as labourers/ workers, house helps and home makers, during menstruation and propose better options in context to material and system towards accessibility of the same, that can be used by them during their menstrual cycle.

## Methodology

Identification of all the stakeholders was done keeping in view the following:

- a. Rural areas, peri-urban and sub-urban areas where in the scope to identify low percentage of women using hygienic methods of menstrual protection is greater.
- b. Women aged between 18 to 45 approximately may be farm labourers, construction labourers, house helps or at times home makers.
- c. Stake holders were identified in groups in specific places.
- d. It was impossible in context to time duration and geographical span to study all the districts in each of the aforementioned states. So, women from particular district in each of the aforementioned states is studied and analysed so that a large envelope of social, cultural, traditional and lifestyle practices have case studies. The places visited over a period of 7 months are as follows:
- e. Nathupur suburban area and Sampatchak village near Patna, Bihar.
- f. Nuatoli and Bondamunda peri-urban area near Rourkela, Orissa.
- g. Shahpur village and Kosmi sub-urban area in Betul, Madhya Pradesh.
- h. Palakonda suburban area and Bhuthalaguda village, Srikakulam, Andhra Pradesh.
- i. Paratwada and Achalpur peri-urban area in Amravati, Maharashtra.
- j. Karwar and Gharab village in Jodhpur, Rajasthan.
- k. Sub urban areas of Raibareli, Uttarpradesh.

It was the requirement of the research study that the researchers spent a substantial time in the field. Kurt Lewin in his interpretation mentioned that there is a limitation of studying complex real social events in a laboratory environment. There is always a complexity of splitting the elements of an integrated system retaining its genuineness in natural condition [8]. Effort is made to adopt apposite methodological path incorporating both qualitative approach and quantitative approach with the aim to answer fundamental questions i.e., “what”, “why”, “who”, “whom”, “when”, “whether”, “how”, etc [9].

The research approach is largely naturalistic (qualitative) inquiry approach with the application of systems thinking and systems theory towards understanding the ecosystem in confluence with the tradition, culture, experiences and actions of women belonging to various communities [10]. The systems theory applied in the research is as follows [10].

- To explore the similarity of materials and their applications, concepts, laws, etc in various area or line of work, and to help in their utility in the contextual study.
- Endeavour towards expansion of theoretical and possibly replicable models in the concerned field.
- Harmony of science is respected and in the course of action communication is established with experts from related and various fields.

The study emphasised upon the interaction of women in their ecosystem especially with their social and cultural environment. Primary data collection was done with the help of interview process as a part of participatory approach and observation. The interview was conducted in 17 rounds with 865 women and girls across 7 states in India mentioned pre-page.

Stakeholders:

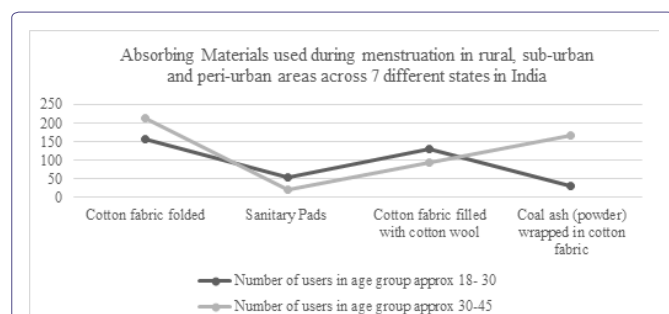
1. Women engaged in informal economy - Women aged from 18 years till their menopause which occurs nearly around 46.2 years (Average age of menopause of an Indian woman), engaged in income-generating activities or home makers. How they manage their mensuration cycle at home or in the workplace without embarrassment or stigma. Especially targeting in low- and middle-income societies [11].
2. Adolescent Girls - Girls at the age of 10 to 17, are at a time of emotional, physical and social transformation, many Indian girls entering puberty are ignorant about menstruation, a natural physiological process that requires appropriate management during early adolescence [12].
3. Family Members of the Women/Girl - The family members of the women or girls are also affected by their menstrual health as it often refrains them in many social activities and daily chores also.
4. Workplace (other co-workers) - The co-workers might also suffer indirectly due to insufficient care given towards the health.
5. Product developers and manufactures - Sanitary Napkins/ Tampons manufacturers Pertain to the phenomenon and efforts are made to make those 5-6 days bearable for the women and girls. However, at a cost.
6. NGO's - NGO's working for children and women education programme and also the betterment of Menstrual hygiene of informal workers helps them to understand the need to talk about the problems they face and spread awareness.
7. Hospitals and Rural health centres- They form a substantial support to people from low- and middle-income societies where they assess the knowledge regarding menstruation and menstrual hygiene.
8. Medical Shops, Grocery shops and Government ration shops- These are the places from where people from low- and middle-income societies procure most of their supplies.

## Identified problems

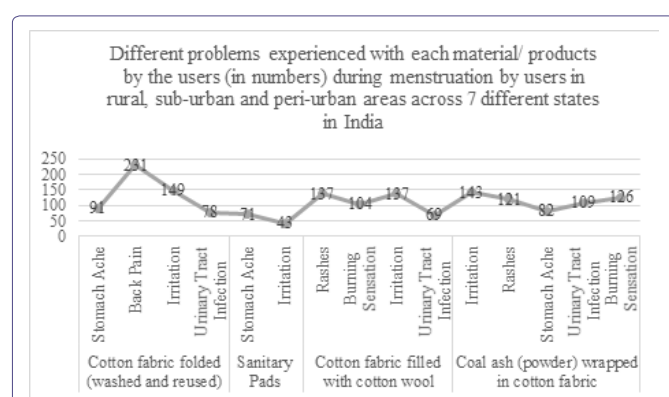
It is identified, the kind of absorbing materials used during menstruation in rural, sub-urban and peri-urban areas across 7 different states in India as mentioned in pre-page. Figure 1 below mentions the number of women in age group of approximately 18-30 and 30-45 uses particular material/ product.

In Figure 2 below the problems are mentioned associated with each of the materials/ products by the users.

It is evident that cotton fabric folded (washed and reused) is largely preferred by users of both the age group i.e., 42.5%. The users for cotton fabric filled with cotton wool is approximately 25.7% and for coal ash (powder) wrapped in cotton fabric is 23%. The preference for sanitary pads is found to be very low i.e., approximately 8.6% and



**Figure 1:** Absorbing Materials used during menstruation in rural, sub-urban and peri-urban areas across 7 different states spread across length and breadth of India.



**Figure 2:** Different problems experienced with each material/ product by the users (in numbers) during menstruation by users in rural, sub-urban and peri-urban areas across 7 different states in India.

mostly preferred by the age group of approx. 18- 30. Whereas age group 30 to 45 depends mostly on washed cotton fabric. This is due to lack of awareness as well as to reduce the expenses.

Over 77% of menstruating girls and women in India use an old cloth, which is often reused. Further, 88% of women in India sometimes resort to using ashes, newspapers, dried leaves and husk sand to aid absorption. (SOS Childrens' Village. Social taboos damage the health of girls and women [13]. It is observed that the largest number of problems is associated with the coal ash (powder) wrapped in cotton fabric. Out of a total of 199 users 71.8 % users complained of irritation. 60.8% users complained of rashes. A staggering 54.7 % users complained about Urinary Tract Infection and 63.3% users talked about burning sensation that they experience.

Poor protection and inadequate washing facilities may increase susceptibility to infection, with the odour of menstrual blood putting girls at risk of being stigmatized. The latter may have significant implications for their mental health [14]. Similarly, there are multiple problems associated with the absorbing materials- Cotton fabric folded (washed and reused) and cotton fabric filled with cotton wool. In both the cases Urinary Tract Infection and irritation is common.

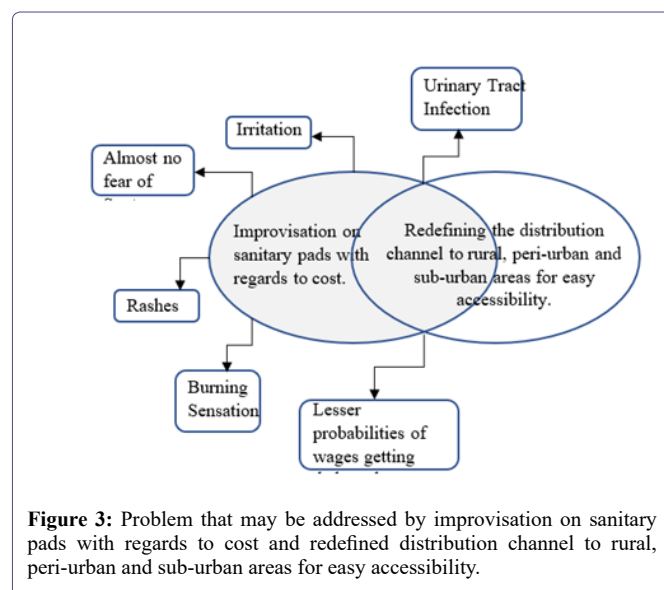
The users for sanitary pads were less in numbers. The problems shared by the users associated with the material/ product is least. Out of a total of 75 users 57.3% users experience irritation. It is also noted that most of the women dispose the used absorbing material wrapped in polythene packet in local garbage area.

Other than the afore-mentioned problems there are other hindrances and taboos faced by the women. They are: fear of spots, scared of sharing, considered impure, not allowed to worship or enter worshipping place, sleep on the floor separately, avoid make up, wages get cut and problem of changing at working site, hence coming back home to change.

## Results

During the interview process as a part of participatory approach the women are of the view that all of them want to use sanitary pads (not tampons as it is inaccurately associated with tearing the hymen and loss of virginity) [15]. However, the price of the sanitary pads and they're not so easy accessibility in rural, sub-urban and peri-urban areas doesn't help their cause. It was also suggested by the women that there should be proper washroom at workplace of different income-generating activities in informal economy, maintaining hygiene.

Brain storming process [16] was conducted primarily to ideate suitable strategies towards menstrual health and hygiene in rural, sub-urban and peri-urban areas, understanding the setbacks or problems presiding the society at present day. It is deduced that if there is improvisation done with reduced cost to the users and the distribution channel is redefined then a large number of problems related to menstrual health and hygiene may be addressed. Figure 3 below describes the same.



**Figure 3:** Problem that may be addressed by improvisation on sanitary pads with regards to cost and redefined distribution channel to rural, peri-urban and sub-urban areas for easy accessibility.

To overcome this problem super absorbent polymers (SAP) may be used in sanitary napkins for better functioning. SAP should have the property to remain insoluble in the fluid that it absorbs and strongly retain the liquid. Exertion of the pressure upon the material does not cause the fluid to drain out. The sanitary napkins are made from super absorbent material which is a hydrogel material having the capacity to hold and retain extremely large volume of fluid. It has the ability to absorb 50- 300 times more than their weight. Superabsorbent Polymer is available in 3 forms –

1. Powder
2. Granule
3. Fibre

Superabsorbent Polymers can be broadly categorized into the following [17]:

- Sodium Polyacrylate
- Polyacrylamide Copolymer

They are formed by free radical polymerization of acrylate, methacrylate, acrylamide etc. in the presence of small quantity of cross-linking agents contains two or more polymerizable double bonds.

In case of Sodium Polyacrylate the material is granular and at times in fibre form. The granular form is made up of millions of undistinguishable entities of sodium polyacrylate, formed in a chain and mesh like structure. They are interconnected to make a 3-dimensional network. It helps them attain great fluid absorbing capacity and, in the process, it expands structurally. The liquid is locked the molecular network [18].

In case of Polyacrylamide Copolymer, it functions like a matrix of cellulose hydrogel. The hydrogel has super-absorbent properties [19]. The polymer particle shape/structure is important because it affects towards rapid absorption of liquid, and ease in absorption of liquid, and how easily the particles can be formulated into the final product. The size distribution of the polymer particles formed by the inverse suspension polymerization of acrylic acid is quite narrow. Generally, in case of suspension polymerization spherical shape of the polymer can be obtained [20]. If non-ionic monomer like acrylamide is used instead of acrylic acid, then the particle size distribution changes quite markedly. The particle size distribution broadened towards the smaller particles by altering the hydrophilic-lipophilic balance and changing the behaviour of the stabilizer [21].

Both Sodium Polyacrylate and Polyacrylamide Copolymer costs between Rs. 150 – Rs. 250 per kg i.e. approx 2.5 US\$ [22]. On an average The manufacturing cost of an sanitary pad is between Rs. 3 to Rs. 4.5 i.e. 0.037 US \$- 0.055 US \$ [23, 24].

Moving the attention towards the manufacturability of cost effective yet efficient sanitary pads a number of prototypes were worked upon. It is observed that in ideal sanitary napkins there are four layers. They are: porous/permeable top layer which comes in direct contact of the body, transfer layer, absorbent core consisting of cellulosic material and finally the impervious back layer. Explorations were made with various materials e.g., cotton, viscose/ rayon as woven or non-woven, low-cost superabsorbent composites and even oxobiodegradable plastics.

In a Sanitary napkin, the retention layer of the absorbent core is covered by first tissue sheet of a density between 0.01 g/cm<sup>3</sup> and 0.1 g/cm<sup>3</sup> and by a second tissue sheet of a density between 0.08 and 0.3 g/cm<sup>3</sup>, the difference in density between the tissue sheets being between 0.01 to 0.2 g/cm<sup>3</sup>. The density gradient on top of the retention layer results in a relatively high efficiency of the retention layer and in efficient draining of the topmost tissue sheet, so that chances of rewet are reduced.

From the U.S. Pat. No. 2787271 [25], it is known to use in a Sanitary napkin an upper layer of a relatively high absorbency and low density, and a lower layer having a higher degree of compression. The upper layer Serves to provide a highly absorbing and soft contact surface for the wearer and lower layer acts as a fluid retention layer.

From the English patent GB-A-2 089 214 [26-28], a sanitary napkin is known having an upper layer of a density of 0.03 and 0.15 g/cm and a lower layer of compressed cellulose having a density between 0.4 and 1.0 g/cm. The combination of the relatively open pore Structure of the upper absorbent layer and the comparatively dense bottom layer, provides for rapid fluid transport through the top layer in a localised area and preferential absorption along the lower absorbent layer.

Accordingly, a three-layered sanitary pad concept is proposed with materials Cellulose Acetate, Viscose Rayon and small boiled cotton fibre for inside layering material. Four outer material poly olefin fine sheet may be used for getting protection from stains and leakage [28-34].

The distribution system may be reworked as follows:

- *Jan Aushadhi* Stores: In India medical stores by the name *Jan Aushadhi* Stores, backed by *Pradhan Mantri Bhartiya Janaushadhi Pariyojna* (PMBJP) are located in almost every district. The objective is to ensure and make available quality generic medicines for all [27].
- Fair price shop also known as ration shops: They are public distribution shops. They mostly sell wheat, rice, sugar oil at a price lower than the market known as issue price. It has its reach in remote, rural, peri-urban areas, hilly areas and sub-urban areas largely catering to economically low-income group, poor and below poverty line societies.
- Government secondary schools in rural, sub-urban and peri-urban areas: It is proposed that they may offer a space to sell at their premises. One of the staff may be given the responsibility.
- Government secondary schools in rural, sub-urban and peri-urban areas.
- Local grocery shops: They are everywhere and in different societies.
- Post office: They have an extremely good reach in remote areas.

With the distribution system mentioned above the accessibility of low-cost sanitary pads will be higher for the people in informal economies where in women are engaged in income-generating activities or homemakers especially in rural, peri-urban and sub-urban areas and even slum areas. The source of accessibility is multiplied many times because presently the low-cost sanitary pads are available in *Jan Aushadhi* Stores. There is lack of awareness in people regarding the *Jan Aushadhi* Stores and many a times they are not accessible as they are located far.

## Conclusion

During the interview process as a part of participatory approach the women are of the view that they want menstrual hygiene management with sanitary napkins. But it is difficult to afford owing to the cost and it is also not readily available.

Low-cost sanitary napkin is proposed which may be retailed at Rs 2.00/- per piece (0.024 US \$). The distribution system is proposed in a way that women who are engaged in income-generating activities or home-makers especially in rural, peri-urban and sub-urban areas and even slum areas may procure sanitary napkins in less than approx. 1 kms reach across the board.



On an average a normal woman would spend around Rs. 1500 to Rs. 2000 per year (18.89 US\$ to 24.39 US\$ approximately) on sanitary napkins as a part of menstrual hygiene management. The solution in this paper empowers women to not only afford menstrual hygiene management with sanitary napkins at approx. Rs 360/- per year (4.39 US\$ approximately) but also easily access it nearby even in remote areas.

The solution and system promise assured returns in the long run with the performance of substantial population. It has the ability to be replicated in desired places or across the board especially in developing economies. It proposes a society with substantive freedoms as well as responsibility towards menstrual hygiene management and diminishing period poverty.

## Acknowledgement

It is observed that around 1.8 billion people across the globe menstruate every month [1]. In India, especially in rural and peri-urban areas or in slums while menstruating, women face problems such as cultural taboos, lack of basic services like toilets and menstruating health hygiene and many more. The paper highlights the problems faced by women in low- and middle-income societies. The assessment includes interviewing women across 7 states (spread across east, west, north, south and central part of India) including the states of Madhya Pradesh, Orissa, Bihar, Andhra Pradesh, Maharashtra, Rajasthan and Uttar Pradesh focussing on (a) products or material used by them (b) problems faced by them related to health (c) ways of disposing (d) other problems related to their performance. Studying about Super-absorbent Polymer, oxo-biodegradable plastic with the objective of proposing economical sanitary napkins for the women with reduced prices to about 70% to 85%. The paper also discusses, redefining the social system in rural and peri-urban India towards a healthy lifestyle which is affordable.

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- Jagriti Gramotthan Samiti, Betul
- Mahila Sewa Samaj, Amravati
- Society for Community Development, Palakonda
- Dalit Samaj Bal Evam Mahila Utthan Sansthan, Raibareli.

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