

Can Menstrual Cup be an Alternative for Better Menstrual Hygiene Management? A Review

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“Let womanhood bloom without gloom”

A woman is the essence of the whole universe and the universe without women would be like galaxy without the sun. Menstruation is a unique phenomenon of females of reproductive age group. However, it has been always surrounded by so many old myths, taboos and superstitions which exclude them from many aspects of social-cultural life.

A menstrual cup is a type of feminine hygiene product which is usually made up of medical grade silicone, shaped like a bell and is flexible. It is worn inside the vagina by folding it in C shape as it is flexible and gets adjusted to the shape of vaginal cavity during menstruation to catch menstrual fluid (blood). About every 4-12 hours (depending on the individual flow), the menstruating woman removes the menstrual cup from her vagina, empties the collected blood in the toilet or sink, washes the cup under running water and inserts it again. At the end of the monthly period, the cup can be sterilised, usually by boiling in water. Unlike tampons, pads and cloth the cup collects menstrual fluid rather than absorbing it. Delaney et al (1988) referred to the cultural history of menstruation as a “the curse” reflecting the taboo associated with it.

In low-income settings, many women and girls face activity restrictions during menses, owing to lack of affordable menstrual products (Beksinska et al, 2015). In present scenario women and girls of a developing country like India instead of the availability of various other alternatives still lack sufficient knowledge and practice related to proper menstrual hygiene.

All about Sanitary Pads?

It has been suggested that an average woman uses 10,000 sanitary products during her life time (Stewart et al, 2009). Study previously looking at 51 women’s tolerance of using a bell-shaped ‘Menses cup’ showed that 45 percent of women found it acceptable. They proposed, it could be used for the objective measurement of menstrual blood loss, although it has not been used as such (Cheng et al, 1995).

Menstrual cups hold up to 3 times the fluid that

tampons do. This means a female has to empty it only a couple times a day which will lead to less worry and less mess as there is no any proper guideline on average time of using a single pad and due to various causes women are not able to dispose them properly specially in Indian scenario.

In India 355 million women are in reproductive age groups using napkins and throw away over 7 million sanitary napkins in a year. If every menstruating woman in India would use a sanitary pad we have

A female is generally having 456 total menstruation cycles throughout her life; menstrual cups are cheaper than disposable pads and tampons. On an average a pad costs Rs. 15-18 and ideally for a complete 5 to 7 days of a menstrual cycle a woman should use at least 40 pads per period. However, it depends on individuals, the menstrual flow and the quality of sanitary pad; on average figure she expenses over 1.5 lakh rupees throughout her fertile life ($10000 \times 15 = 1,50000$). According to leading Mumbai based gynecologist Dr Duru Shah sanitary pads should be changed after at least 3 to 4 hours interval since long time using of the same pad can lead to various health issues.

to deal 58 billion sanitary pads every year. It has been estimated that the plastic component of an average sanitary pad is equivalent to 4 average size plastic bags so every menstruating women is throwing away an equivalent of 50 average size plastic bags every month; assuming that all women would use sanitary pad and throw it away, that would occupy 288 hectares in a land fill and these sanitary pads will set infection there and contaminate the environment for 500 – 800 years.

The material used in pads can cause cancer as most of these plastic materials have chemicals like BPA and BPS that can complicate embryonic development. Sanitary pads are made of cellulose gel and the fibre. As absorbent pads can cause cervical cancer; the dioxin present in pads is an environmental pollutant and can also cause ovarian cancer. The cotton pads contain furan, a dangerous chemical. Pesticides and herbicides can harm when they come in contact with bloodstream. These chemicals are linked to thyroid malfunction, infertility and other health problems; 70 percent of the female suffer from

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UTI due to pads. Research says that a short term exposure to dioxin can cause skin darkening and alter liver function. A female might be using 8000-10000 sanitary napkins in her life time and accumulation of these chemicals in body can cause serious health issues like immune system damage, diabetes, hormone dysfunction, PID, ovarian cancer, infertility, birth defects; scented pads cause, bacterial and yeast infections. The menstrual cup is one potential cost-effective product; however, provision of this insertable MHM product in schools in low-income countries with challenging water, sanitation and hygiene (WASH) conditions, increases the need for assurance of good hand hygiene (Nyothach et al, 2015).

In total, women spend around six to seven years of their lives menstruating. A key priority for female of reproductive age group is to have the necessary knowledge, facilities and cultural environment to manage menstruation hygienically, and with dignity (Mahon & Fernandes, 2010).

Benefits of Menstrual Cup

Economical: It is affordable simply due to reusability. Women spend money buying pads and tampons. Girls can use up to 15,000 hygiene products in their life time while they only need to use five or six vaginal cups since they are reusable for up to ten years – which means fewer trips to pharmacy store.

Environment friendly and hassle-free waste disposal: According to the environmentalist, using sanitary pads and tampons is a big threat to the environment from raw materials to processing and production. Based on research, the tampons are made up of cotton fibre, and take six months to biodegrade, which is hazardous for the environment while cups are environment-friendly.

Maintains vaginal pH and aids in minimal bacterial growth: As pad contains harmful chemicals and it makes the soft vaginal area more prone to infection by absorbing the normal moisture and allowing bacteria to enter and accumulate. Even though the condition makes the female to believe that it's common to experience allergies and itchiness in vagina during menstruation which is actually not. The cups can be easily emptied when it's full and with minimal or almost no presence of bacteria since it can be sterilised after any use.

Accessible and convenient: The cup is made up of silicon and rubber, designed to be flexible, soft edges and are flexible for quick and easy insertion though the pads are easy to place but the associated risks are much more.

Inodorous: Using of the scented hygiene products is discouraged by medical experts because the added chemicals cause irritation and further vaginal infec-

tions due to reaction between expelled blood, preservative gel present in pads and the environment of vaginal flora. So with cups there is no need to be too conscious about unpleasant menstruation odour since there is very less exposure of the fluid to the air.

Safety: Menstrual cups are safe to use with no reproductive health issues; the materials are made up of FDA - approved food grade silicone. Medical studies have shown that the health risks of napkins and tampons are much more and cups are the safer alternatives to manage menstruation.

Facts related to menstrual hygiene:

- ❑ 10% of the girls in India believe menstruation is a disease (UKAID)
- ❑ Only 13% of the girls are aware of menstruation before their first period (UNICEF / MHM)
- ❑ 56% of the girls – in and out of school - did not receive any information about menstruation (UNICEF / MHM)
- ❑ 66% of the Indian girls do not know anything about menstruation before their first period (UNICEF / MHM)
- ❑ 87% of the women and girls are completely unaware about menstruation and do not have any knowledge about the purpose of menstruation as a biological process (UNICEF / MHM)
- ❑ For 23% of the girls in rural areas of India, having their period is one of the reasons to quit school, with irreversible effects for their personal development, economical status and eventually their health.
- ❑ 28% of the students in India do not go to school during their period, due to lack of facilities and materials (UNICEF)

Use of materials

- In India the majority of women in rural areas mostly use reusable cloths to absorb menstrual blood (WaterAid)
- For the absorption of menstrual blood, 89% use cloth, 2% cotton wool, 7% sanitary pads and 2% ash (WaterAid)
- Of the women using cloth as absorbents, half use the same cloth for more than a month (WaterAid)
- 75% of the girls have no idea about what material to use to absorb the flow (UNICEF MHM)
- 75% girls use cotton cloths during their period (UNICEF / MHM)
- 27% schoolgirls do not use any material at all (UNICEF / MHM)

- Hygiene and access to products: only 16% girls use sanitary napkins (UNICEF / MHM)
- 43%-88% girls in urban India use reusable cloth, yet these are often washed without soap or clean water; only 12% of schools have soap available (UNICEF)
- In India 14% of the girls report to suffer from menstrual infections (WaterAid)
- 52% of the female population is in reproductive age and most of them are menstruating every month; majority of them have no access to clean and safe sanitary products (SSWM)
- Lack of facilities and appropriate sanitary products can push menstruating girls out of school (SSWM)
- 60% of girls in India only change their menstrual cloths once a day (UKAID)
- High costs and unavailability of sanitary pads is the prime reason for women and girls in India not to use sanitary pads (WaterAid)
- Poor menstrual hygiene not only affects physical health, but also social mental wellbeing, thus it is a violation of the human right to health (MenstrualHygieneDay.org)
- In rural India, many women and girls use unhygienic materials such as old rags, husks, dried leaves, grass, ash, sand or newspapers because they do not have access to affordable, hygienic and safe products and facilities (MenstrualHygieneDay.org)
- Shops in villages often do not have sanitary pads for sale, because there is no demand for it (UNICEF/MHM)

- 41% of adolescents hide their cloth in the room, 22% in the roof and 11% share the cloth with others (UNICEF / MHM) (Therese Mahon & Fernandes, 2009)

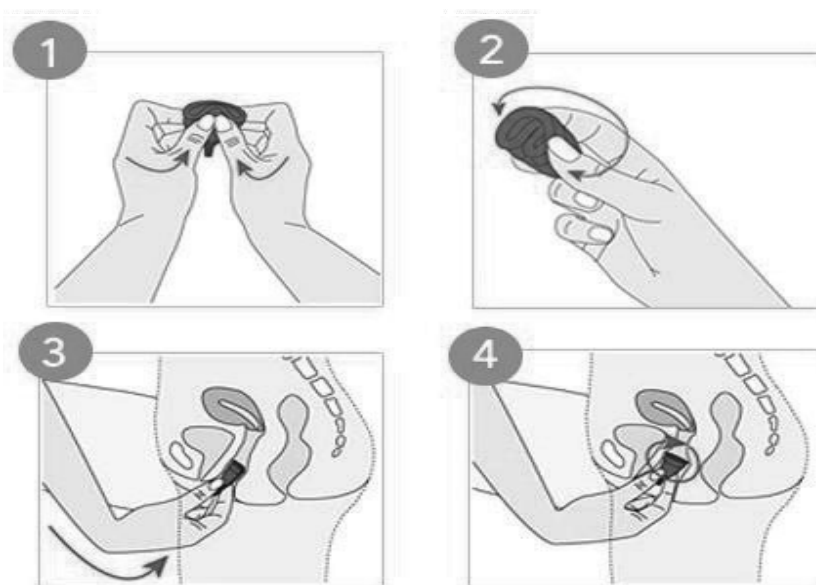
Poor Knowledge about Menstrual Hygiene Management:

A study on 730 girls of Ajmer (Rajasthan) 13-19 years found that large proportion (more than 90%) of girls were not aware about menstruation (Khanna et al, 2005). According to a survey in Ethiopia, South-Sudan, Tanzania, and Zimbabwe on School girls above 11 years, boys, teachers, school head, parent teacher association, school development committees, and community leaders were assessed by Interviews, Check list and FGDs for 6 months. People were having misconceptions about menstruation in LMIC with unavailability of proper hardware and software interventions where devices used for MHM were known as Hardware and their education and level of knowledge about menstruation was classified as software intervention (Tamiru et al, 2015).

In a comparative case study in Cambodia in which girls' own suggestions were invited on improving pubertal guidance & modification in WASH, the result showed poor level of knowledge about menstruation. Sommer (2012) in an American journal paper stated that a growing attention is needed to address girls' and women's MHM-related needs in post-disaster and post-conflict settings. The same type of study repeated by Sommer & Marni (2015) showed similar results. Trinies et al (2015), conducted in depth interviews on 26 girls and 14 teachers in Mali and concluded that a culture of keeping silence about menstruation leads to decreased level of MHM. According to a descriptive cross sectional study in West Bengal, India on 190 adolescent girls, questionnaire were given to assess high quality MHM in girls and their mothers. The result showed that among girls of educated mother, 42 percent had knowledge about menarche, usage of proper sanitary latrine and exposure to advertisements promoting usage of sanitary towels in mass media (Sudeshna & Aparajita, 2012).

Parker et al (2014) stated in their study in Uganda that women from village and schools lacked MHM education in IDP with poor health and suffered low self esteem about menstrual hygiene management.

The issue of menstrual hygiene is not only important from the health point of view, but also considers social and human rights values attached to it (Garg et al, 2012).



Method of inserting menstrual cup (by folding)

Menstrual Hygiene Management and Menstrual

Cup: Many women and adolescent girls from poor families cannot afford to buy sanitary towels, and resort to using strips of old cloth and other unhygienic methods. The study assessed the cultural, practical and health-related appropriateness and feasibility of the menstrual cup as a method for managing menstrual flow. The only problem is, assuring a high level of hygiene is needed for insertion and removal of the cup (APHRC, 2010a).

Use of sanitary pads and washing the genital area are essential practices to keep the menstrual hygiene. Unhygienic menstrual practices can affect the health of the girls and there is an increased vulnerability to reproductive tract infections, pelvic inflammatory diseases and other complications (Upashe et al, 2015).

Adolescent girls often lack knowledge regarding reproductive health including menstruation hygiene which can be due to socio-cultural barriers in which they grow up. The study explored the knowledge, practices and sources of information regarding menstruation and hygiene among adolescent girls, almost half of the rural participants dried the absorbent inside their homes (Kamath et al, 2013). Proper MHM can be achieved by giving proper training and health education (by teachers, family members, health educators, and media) so that there won't be any misconception to the adolescent girls regarding menstrual hygiene (Adhikari et al, 2007).

A study was conducted to determine the prevalence of dysmenorrhea, premenstrual symptoms and other menstrual disorders among adolescents who receive their health care at an urban adolescent health centre, the attitudes and expectations of adolescents relating to their menstrual period and relationship between teens' attitudes and expectations regarding menses and actual menstrual-related morbidities such as school absenteeism (Houston et al, 2006). A school health education on menstrual problems targeting adolescent girls and their parents and routine screening for menstrual problems by healthcare providers can help to prevent the absenteeism in the school (Dambhare et al, 2011).

Issues related to menstruation and its practices are still foggy due to taboos and socio-cultural restrictions resulting in adolescent girls remaining uninformed of the technical facts and hygienic practices to keep good health that is why sometimes it results in to adverse health outcomes (Verma et al, 2013).

Menstrual Hygiene Management and Associated Complications: Dambhare et al (2011) reported that there was a general lack of information about men-

strual issues especially with regards to cycle length, duration of menses and age at menarche. Girls from families of high socio-economic class have significantly lower mean menarcheal age in both urban and rural area. The mean age of menarche was significantly higher in girls involved in vigorous sporting activity in urban area compared to their non-sporting counterparts. Dysmenorrhea was the commonest problem faced during menstruation (78.7%) followed by back pain and excessive blood loss. Girls still faced different types of restrictions like not being allowed to visit holy places, not being allowed to cook and touch male family member etc. The study concluded that traditional beliefs regarding menstruation still persist and menstrual hygiene among the adolescents was found to be unsatisfactory. Menstrual hygiene is an issue that needs to be addressed at all levels (Sapkota et al, 2013).

Case control trial in Odisha India on 486 women in which sample collection (urine, blood) and diagnostic assessment (vaginal swabs) was done for a 9 months period which showed that uro-vaginal infections were more common in women who used reusable absorbent pads. Access to private facilities with water for MHM and educating them about safer, Low cost MHM materials could reduce UTI (Das et al, 2015). Case report of Canada Documented the first case of toxic shock syndrome associated with the use of menstrual cup for the first time (Mitchell et al, 2015).

Policy project by Government

The Government of India has started a new scheme aimed at offering sanitary pads at a subsidised rate to adolescent girls in rural areas. In South Gujarat, a new soft cloth (falalin) is commonly used as sanitary pad. Falalin cloths are culturally more acceptable as they are readily available, easy to use and cheaper than sanitary pads (Shah et al, 2013). The review of Government that pad should be available for the girls for their proper MHM so as to be changed at least after two to four hours is practically not feasible.

Developing countries like India face the situation of lack of knowledge, good practice and a positive attitude related to better and eco-friendly alternatives for MHM due to a list of causes like lack of awareness, proper education, self-help groups, and lack of freedom to express women and girls perceptions especially at rural area regardless of all the efforts made by the government (Das et al, 2015; Kamath et al, 2013; Shah et al, 2013; Verma et al, 2013).

The pilot project at Nairobi/ Kenya conducted RCT on 90 women and girls for five months and according

to their report menstrual cups presented a good opportunity to educate and impart knowledge, was beneficial in boosting confidence of women & girls in social problems (APHRC, 2010b).

In a pilot project in Uganda on 31 women who used menstrual cup for 5 months according to authors, all study participants found menstrual cup as a comfortable device after using a few times. Cup use made them easy to do walking, biking and attending social gathering (Tellier et al, 2012).

A Better MHM Product and Satisfactory Results

In Western Kenya, cluster Randomised Control Trial was done on 71 school girls of 14-16 years and Focus Group Discussions with 12 participants who were divided in groups as Ist group-Cups with (size B & A WASH) IInd group - pads, Control group - traditional method for 13 months. After the completion of the study the result revealed that girls with cup had high rate of hand washing in comparison to girls using pads and traditional method (Nyothach et al, 2015). Primary schools of Western Kenya 604 girls had been given insert-able menstrual cup, monthly sanitary pads or 'usual practice' (controls) after 11 months in the result. No evidence of the harmful or hazardous effect of menstrual cups was observed (Juma et al, 2017). A soft cup on 406 participants were tested on pre-clinical & clinical testing the study in US which showed that soft cup which is a single size vaginal device has no significant health risks and is acceptable to many women without the need for fitting or other medical services (North & Oldham, 2011). Studies reported that menstrual cup was well tolerated by women and adolescent girls (APHRC, 2010b; Cheng et al, 1995; Stewart et al, 2009; Tellier et al, 2012).

Adaptability and Effectiveness of Menstrual Cup

Menstrual cups have been available for decades, but their use is limited by bulky design and the need for multiple sizes. Total 158 participants aged between ages of 20 to 50 years with regular menstrual cycle were enrolled by Kakani & Bhatt (2017). Feedback was obtained after every cycle for three cycles using a structured questionnaire. The cup was preferred for comfort, dryness, and less odour. Insertion was easy for 80 percent participants and 90 percent found removal easy. Problem of leakage was encountered by 3-6 percent. There were few side effects like rashes, dryness or infection. These results demonstrate that this reusable vaginal device has no significant health risks and is acceptable to many women without the need for fitting or other medical services.

Conclusion

There is sufficient evidence to establish the effectiveness of menstrual cup as a better alternative promising results. Further research is needed to establish a better and economic alternate for MHM with satisfying women and girls or an ongoing research is in great need to provide a pure safest outcome method. This study provides a concise summary of present trials and highlights improvements for future work.

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