

## Original Research Article

# Experience and adaptability of menstrual cup as a menstrual hygiene management method among its users in Kerala

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## ABSTRACT

**Background:** Inadequate menstrual management has long been a major health issue. A growing number of women are turning to menstrual cups as a viable and secure choice. Because it is not an absorbent like tampons, the risk of infection and other severe health problems is rare or absent. Current study is conducted to assess the perceived benefits and difficulties faced by those who use menstrual cup as a method of menstrual hygiene management (MHM) technique.

**Methods:** A cross sectional study was undertaken among 211 women who had used menstrual cup for at least six consecutive cycles. Participants were selected using snowball sampling and data was collected by an online questionnaire.

**Results:** Mean age of participants was 32.16 years and majority got information regarding cup from friends or online sources. Experience of insertion and removal became significantly easier after the third time use onwards. Majority of the health problems and economic difficulty for purchasing MHM products significantly got reduced after starting the use of cup. Few reported allergy and irritation 6 (3%), rashes 2 (1%), dryness 5 (2.5%) and infection 4 (2%). Difficulty in availability of clean water 15 (7.2%), access to clean toilet 3 (1.4%), need for privacy 8 (3.8%) and difficulty in sterilization while travelling 44 (21.2%) were other reported challenges. Improvement in attendance 78 (38.4%), work participation 115 (55.8%), economic benefit 190 (91.3%), health benefits 143 (70.4%) and social activity 158 (76.7%) were reported by participants after starting cup use.

**Conclusions:** Menstrual cup is a safe and comfortable alternative. Health concerns are significantly less compared to other MHM products. More awareness campaigns and better availability of cup should be there in the community.

**Keywords:** Menstrual cup, MHM, WASH, Menstruation

## INTRODUCTION

Inadequate menstrual management has long been a major health issue in low- and middle-income nations, but it has only recently become a major public health concern. Females may manage menstruation with non-absorbent, unhygienic, and uncomfortable materials due to a lack of awareness, an unfavorable sociocultural environment, logistical and financial barriers, and a lack of a proper support system. These are linked to an increased risk of

reproductive tract infections.<sup>1,2</sup> Another issue is a lack of Water Sanitation and Hygiene (WASH) facilities, which leads to disempowerment, limited opportunities, and bad health, all of which are clear violations of human rights that demand immediate attention and investment from policy makers.<sup>3</sup>

One of the most important aspects of proper menstruation management is having access to a safe, comfortable, and long-lasting period hygiene product. Sanitary pads and

garments are the most commonly used solutions among women.<sup>4</sup> They have a number of drawbacks, including allergy, itching, pain, fear of leakage, storage, disposal, and environmental concerns, as well as the financial burden of monthly purchases.<sup>5</sup>

Despite the fact that menstrual cups have been around for decades, their use is still not widespread. A growing number of women are turning to it as a viable and secure choice. According to several studies, most users get comfortable after 2 to 3 consecutive cycles of using the cup, and because it is not an absorbent like tampons, the risk of infection such as TSS and other severe health problems is rare/absent.<sup>5-7</sup> There were only a few minor adverse effects, such as rashes, dryness, or infection<sup>8</sup>. Long-term cost effectiveness is great since it can be securely reused for more than 5 years.

As a result, it's critical to learn about the advantages and drawbacks of using a menstrual cup so that women may consider it as a safe, hygienic, and long-term option. In our state and country, there is a gap in the literature on this subject. In this backdrop the current study is conducted to assess the perceived benefits and difficulties faced by them while using menstrual cup as a method of Menstrual Hygiene Management (MHM) technique among its users in Kerala.

## METHODS

A descriptive cross-sectional study was undertaken among women of reproductive age group (15-49 years) the criteria for inclusion being women who were menstruating and had used a menstrual cup for at least six consecutive cycles. Women of Kerala origin were included in the study and study was conducted during the year 2021. Those who haven't given informed consent were excluded from the study. Snowball sampling was used to choose participants. An online semi-structured questionnaire was sent to persons and women's social media group who were known to authors and participants using menstrual cup as per inclusion criteria were requested to forward the questionnaire to their contacts who were using the cup in a snow ball manner. All data was collected online. Sample size was calculated as 160.<sup>6</sup> Total of 211 women participated in the study. Study had been approved by the institutional ethical committee and an online informed consent was taken from all the participants included. Data collected were coded and entered in MS Excel and analyzed using SPSS version 20. Descriptive data was analyzed to find out mean and proportions and chi square test was used to find out the association between qualitative variables.

## RESULTS

### *Socio-demographic profile*

Mean age of participants was 32.2±6.5 (SD) years ranging from 19 to 50 years. The majority of participants

had completed higher education; 135 (65.8%) had earned a postgraduate degree, 68 (32.3%) had completed a bachelor's degree, and the rest had completed high school (1.9%). There were 24 (12.6%) students, 7 (3.7%) homemakers, and 5 (2.6%) unemployed among the participants. Everyone else was employed. Only 3.8% of people fell into the BPL category, and 85.3% had total monthly household income of more than Rs. 30000. It emphasizes the need of increasing public awareness and ensuring that cups are available to all members of the community.

Majority were married (71.8%), while 50 (23.9%) were single. 7 (3.3%) were in a relationship, while 2 (1%) were married but divorced. 70% of individuals said they were sexually active.

### *Pattern of use of previous MHM product*

Prior to utilizing cup 207, the majority of the participants used sanitary pads (98.1%). Clothes (26.5%) and tampons (8.5%) were two other sanitary products used. With the prior product, 110 (52.1%) changed it three times per day, while 54 (25.6%) changed it more than three times per day and the rest less than three times a day. The majority of participants used to burn sanitary products (69.2%), while 61.8% disposed of them with other garbage, 34.1% flushed them, and 28.3% incinerated them.

### *Experience of using menstrual cup*

The study only included women who had been using a menstrual cup for at least 6 months. The 96 (45.5%) of them used it for 6 to 12 months, 50 (23.7%) for one to three years, and 65 (30.8%) for more than three years. Friends (57.3%) or online sources (58.3%) provided the majority of information on the cup. Advertisements, family members, social media, periodicals, and other events informed the rest of the group. Only 6 people (2.8%) received information from health-care workers.

Most participants found insertion and removal difficult at first, as demonstrated in Tables 1 and 3; however, it became significantly easier in successive cycles from the third to fourth time use onwards on doing a chi-square test. ( $p=0.001$ ).

**Table 1: Experience on ease of insertion, (n=211).**

Ease of insertion	1 <sup>st</sup> time use (%)	2 <sup>nd</sup> time use (%)	3 <sup>rd</sup> time use (%)	Sub-sequent uses (%)
<b>Difficult</b>	95 (45)	20 (9.5)	4 (1.9)	1 (0.5)
<b>Not easy</b>	98 (46.5)	107 (50.7)	50 (23.7)	13 (6.2)
<b>Easy</b>	18 (8.5)	84 (39.8)	157 (74.4)	197 (93.3)

**Table 2: Experience on ease of wearing, (n=211).**

Ease of wearing	1 <sup>st</sup> time use (%)	2 <sup>nd</sup> time use (%)	3 <sup>rd</sup> time use (%)	Subsequent uses (%)
<b>Difficult</b>	41 (19.4)	7 (3.3)	7 (3.3)	1 (0.5)
<b>Not easy</b>	91 (43.1)	60 (28.4)	60 (28.4)	6 (2.8)
<b>Easy</b>	79 (37.5)	144 (68.3)	144 (68.3)	204 (96.7)

**Table 3: Experience on ease of removal, (n=211).**

Ease of removal	1 <sup>st</sup> time use (%)	2 <sup>nd</sup> time use (%)	3 <sup>rd</sup> time use (%)	Subsequent uses (%)
<b>Difficult</b>	80 (37.9)	33 (15.6)	4 (1.9)	2 (0.9)
<b>Not easy</b>	74 (35.1)	61 (28.9)	50 (23.7)	16 (7.6)
<b>Easy</b>	57 (27)	117 (55.5)	157 (74.4)	193 (91.5)

As shown in Tables 2 and 5, wearing became easier and more comfortable for most people after the second cycle ( $p=0.001$ ). Few people found cleaning; challenging at first, but it became simpler with consecutive uses (chi-square test  $p=0.001$ ) (Table 4).

**Table 4: Experience on ease of cleaning, (n=211).**

Ease of cleaning	1 <sup>st</sup> time use (%)	2 <sup>nd</sup> time use (%)	3 <sup>rd</sup> time use (%)	Subsequent uses (%)
<b>Difficult</b>	5 (2.4)	1 (0.5)	1 (0.5)	0
<b>Not easy</b>	30 (14.2)	13 (6.2)	9 (4.3)	8 (3.8)
<b>Easy</b>	176 (83.4)	197 (93.3)	201 (95.2)	203 (96.2)

Other menstrual hygiene products have been linked to a higher rate of leaks (93.4%). Problem of leakage with cup in early cycles of its use (81.6%) and in subsequent cycles of use (47.4%) were both lower than that associated with other MHM products (93.4%). Because of the concern of leakage, 85 (40.3%) of the participants used extra products in addition to the cup on any given day of the cycle. As an extra product, 64 women (76.2%) used sanitary napkins, 15 women (17.9%) used clothing, and 5 women (5.9%) used cloth pads.

Majority of participants (80.1%) changed their cup one to three times per day, whereas the others changed their cup more than three times per day. 138 participants (65.4%) disinfected their cups by boiling them before each period and 140 participants (66.7%) boiled them after each period. Rest disinfected with warm water at the start (21.3%) and after periods (17.1%), using disinfectant at the start (13.3%) and after periods (21.9%) and the rest with plain water. During days of bleeding, the majority of people clean their cups using plain water (62.9%), warm

water (27.1%), disinfectant (12.4%) and by boiling (3.8%).

**Table 5: Experience on feel, (n=211).**

Ease of insertion	1 <sup>st</sup> time use (%)	2 <sup>nd</sup> time use (%)	3 <sup>rd</sup> time use (%)	Subsequent uses (%)
<b>Comfortable</b>	112 (53.1)	172 (81.5)	203 (96.2)	207 (98.1)
<b>Not comfortable</b>	99 (46.9)	39 (18.5)	8 (3.8)	4 (1.9)

### Health problems

When compared to earlier MHM methods most health problems were reported to be greatly reduced after using cup as shown in Table 6. Few participants reported allergy and irritation (3%), followed by dryness (2.5%), infection (2%) and rashes (1%). Other issues mentioned by 1.5% of individuals included symptoms of urinary infection. One person reported to be suffering from an ulcer. Four users (2%) who had a history of infection, was due to improper sterilization and didn't recur after subsequent use. Messiness was reported as a difficulty by 5.5% (first use) and 2.8% (after 3<sup>rd</sup> use) and pain by 10.6% (first use) and none after third use. 133 (65%) reported any one health problem before using cup while it was significantly less 20 (10%) after usage of cup (chi square test  $p<0.001$ ).

**Table 6: Health problems faced by participants while using cup compared to previous methods (n=205).**

Variables	Problems before using cup (%)	Problems after using cup (%)
<b>Allergy</b>	21 (10.2)	1 (0.5)
<b>Irritation</b>	100 (48.8)	5 (2.5)
<b>Rashes</b>	88 (42.9)	2 (1)
<b>Dryness</b>	19 (9.3)	5 (2.5)
<b>Infection</b>	10 (4.9)	4 (2)
<b>Symptoms of urinary infection</b>	5 (2.4)	3 (1.5)
<b>Ulcer</b>	-	1 (0.5)

### Challenges

Other challenges encountered while using a menstrual cup include difficulty in sterilizing while travelling (21.2%), lack of clean water (7.2%), lack of privacy for wearing (3.8%), storage and sterilization (4.8%), access to a clean toilet (1.4%) and leakage while removing cup (0.5%).

The 17 (8.1%) of study participants were using Copper T intra uterine device.

## Advantages

Improvement in attendance (38.4%), work participation (55.8%), economic benefit (91.3%), health benefits (70.4%) and social activity (76.7%) were reported by participants.

The 171 (81.4%) could sleep comfortably, 162 (77.1%) could travel more easily, 93 (44.3%) could participate in sports without difficulty and 79 (37.6%) could swim without hesitancy after starting usage of menstrual cup. Other activities reported which was difficult or hesitant previously include wearing clothes of any color 2 (1%), cycling 1 (0.5%), walking properly 1 (0.5%), dancing 1 (0.5%), and emotional happiness 1 (0.5%). Six (2.9%) of participants didn't report betterment or having any extra activities after cup usage.

After starting using cup yearly expenditure for MHM products have been reduced as shown in Table 7. Cup being a single investment the cost won't recur for its users. The 71 (34.5%) of participants have experienced economic difficulty in purchasing menstrual hygiene products before using cup (Table 8) while only 15 (7.3%) of participants reported to have economic difficulty after starting its usage (chi square test  $p < 0.001$ ).

**Table 7: Yearly expenditure for MHM products (n=208).**

Yearly expenditure (N)	Before cup N (%)	After cup N (%)
<b>Below 500</b>	11 (5.2)	139 (66.8)
<b>500-1000</b>	67 (32.2)	60 (28.9)
<b>1001-1500</b>	60 (28.9)	3 (1.4)
<b>1501-2000</b>	60 (28.9)	6 (2.9)
<b>&gt;2000</b>	10 (4.8)	None

**Table 8: Economic difficulty faced for buying MHM products, (n=206).**

Economic difficulty faced	Before cup (%)	After cup (%)
<b>Always</b>	16 (7.8)	
<b>Occasionally</b>	55 (26.7)	15 (7.3)
<b>Never</b>	135 (65.5)	191 (92.7)

The 181 (85.8%) of participants reported the overall experience of cup usage as excellent, 28 (13.3%) reported as good/average and 2 (0.9%) as poor.

The 210 (99.5%) of participants reported that they will suggest menstrual cup to their friends and relatives.

## DISCUSSION

Majority of participants were middle aged, employed and belonged to above poverty line which may be due to easy access of knowledge and information which warrants the

need for increased awareness and making sure of the availability of cups in all strata of community. Most of them were using pads before the cup as MHM product. Majority got information about cup from friends or online sources which clearly indicate the lack of enough reliable sources of information in the community.

## Experience of menstrual cup usage

In this study it was found that ease of insertion, wearing and removal was little difficult in the first two cycles of use while it became significantly easier from third cycle use onwards. Initial difficulties may be attributed to the time taken for learning the technique of insertion and removal. Few people reported that they had pain while inserting in the initial cycle and two of them opted for a different type of cup and pain got relieved. Users reported that they were very comfortable and were not even aware of the presence of cup inside vagina in the subsequent cycles of use. Similar results of difficulty in earlier cycles of use were obtained in a study conducted by Kakani et al.<sup>8</sup> Another qualitative study by George et al also found that women have experienced difficulty in insertion and removal in the initial cycles and took some time to familiarize with its use.<sup>10</sup> More than 90% of users reports that cleaning and disinfecting the cup as easy from the second cycle onwards. Cup is a better environmentally friendly and sustainable option as the disposal of commonly used sanitary napkins is a concern of pollution. In this study 69.2% were burning their pads before starting the cup usage.

## Health problems and challenges faced while using cup

Important health problems faced while using MHM products were related to allergy. Compared to MHM products used before cup allergic problems including irritation and rash were very low with menstrual cup. Four users (2%) had a history of infection which was due to improper sterilization and didn't recur after subsequent use. One person had ulcer and discontinued the use of cup.

In a study among 158 participants done in Gujarat by Kakani et al few side effects like rashes, dryness or infection were reported among cup users.<sup>8</sup> In another study by Barbara et al difficulties resulting in cup discontinuations included cramping (1%), leakage (1%), and improper fit (3%) and during post marketing surveillance no other significant health risks were reported.<sup>11</sup>

Challenges including difficulty in availability of clean water, access to clean toilet, need for privacy and difficulty in sterilization while travelling signifies the lack of wash facilities for women especially in public places and also during travel which is the key to prevent reproductive tract infections.<sup>12</sup> This need a structural and policy change and it should be considered as women's right to have accessible facilities.



### Economic concerns

There is a reduction in the long-term expenditure incurred for menstrual hygiene products after starting the use of cup as it can be used for years and single time investment will be enough. Economic benefits are reported by participants in this study after using cup as obtained by another study by Medhi et al.<sup>13</sup> Menstruation being a physiological process, healthy MHM should be considered as the basic human right of menstruating persons and cup will be one of the sustainable solutions for reducing period poverty. Government level supply of MHM products will ensure healthy women workforce for the development.

### Other advantages of cup users

Cup users have reported improvement in academic and work participation, health and economic benefit and social activity. Travelling, sleeping, sports including swimming were all improved. In a study conducted by Courtney Howard et al, 91% of participants reported that they would continue to use the cup and recommend it to others as in this study (99.5%).<sup>69</sup> Another study by Beksinska also gave similar results.<sup>14</sup>

Limitation includes data collection using an online questionnaire as cup users who don't have online access might have excluded from this study.

### CONCLUSION

In this cross-sectional study conducted among 211 participants to assess the usage pattern and experience of menstrual cup, mean age of participants was 32.16 years and majority got information regarding cup from friends or online sources. Experience of insertion and removal became significantly easier after the third time use onwards. Most participants used to disinfect cup by boiling. Majority of the health problems got significantly reduced after starting the use of cup. Few reported allergy and irritation 6 (3%), rashes 2 (1%), dryness 5 (2.5%) and infection 4(2%). 1.5% of participants reported symptoms of urinary infection. Difficulty in availability of clean water, access to clean toilet, need for having privacy were other reported challenges. Improvement in attendance, work participation, economic benefit, health benefits and social activity were reported by participants after starting cup use. Significant reduction in economic difficulty for buying MHM products was also found.

Menstrual cup is a safe, comfortable and sustainable alternative MHM product for menstruating persons as evidenced by this study. Health concerns are significantly less compared to other MHM products. More awareness campaigns and better availability of cups should be there in community. Making available of WASH facilities in public places is also important to ensure better health and menstrual management.

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