

# Deciphering the Menstrual Cup Use: Proportion and Barriers Among Menstruating Women in Kerala, India

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## Abstract

**Background** – Menstrual hygiene is an essential aspect in women’s health. Access to safe and effective sanitary products is crucial for maintain reproductive health and preventing infections. Menstrual cup is a reusable menstrual hygiene product that offers a sustainable alternative to disposable sanitary products as it requires low long-term cost and reduced energy consumption for production and disposable.

**Methods** – A cross sectional study was conducted from June 2022 to October 2022 among reproductive age group women. Data on sociodemographic characteristics, factors influencing non-use of menstrual cup were summarized as frequency and percentage. Chi-square test was used to find association between sociodemographic characteristics and menstrual cup non-use.

**Results** – Among 310 participants, only 11.9% of them had ever used menstrual cup. A comparatively higher proportion of users were single women aged less than 30 years residing in urban area. Majority of women did not use cups due to habitual use of pads, lack of knowledge on insertion and fear of pain and discomfort while use.

**Conclusion** –Menstrual cup represents a cost effective and environmentally sustainable menstrual hygiene option. In addition to reducing long term expenditure, it contributes to decreased menstrual waste and environmental pollution. The promotion of menstrual cup aligns with government initiatives aimed at encouraging sustainable practices and reducing environmental burden.

**Keywords** - Menstrual hygiene management, Menstrual cup, menstrual products, reproductive age women

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## Introduction

Menstrual hygiene management(MHM) is a crucial component for women’s reproductive health and wellbeing.<sup>1,2</sup>Despite its importance, MHM remains a significant public health concern, particularly in low- and middle-income countries, where access to safe, affordable and sustained menstrual products is often limited.<sup>3</sup> This in turn lead to increased risk of infection, reproductive tract illnesses and psychological discomfort.<sup>4-6</sup> India faces substantial challenges in ensuring effective MHM, as many women lack access to safe, affordable and sustained menstrual products significant barriers to a comfortable and dignified experience with menstrual health management.<sup>7,8</sup> Menstrual products such as sanitary pads and period panties, play a central role in managing menstruation.<sup>9</sup> Each type of product has its own benefits and limitations, and the choice of each product is influenced by the personal preferences,

cultural norms, economic status, access to resources and health consideration.<sup>10</sup> Despite the availability of diverse options, majority of the women continue to rely primarily on disposable products such as pads and tampons.<sup>11</sup> Improper disposal of these products also contributes to environmental challenges, including clogged toilets and pollution.<sup>12,13</sup> In India, an estimated 121 million girls and women use an average of eight non compostable sanitary pad in a month, which indirectly contribute to a waste load of 12.3 billion pads leading to 113,00 tons of menstrual waste annually.<sup>14</sup> Therefore, safe, effective, and reasonably priced menstruation management techniques are required.<sup>15</sup> Reusable menstrual products, like the menstrual cup, are gaining popularity as a sustainable, cost-effective, and perhaps safer option.<sup>16</sup>

Menstrual cup is cost-effective, flexible, bell-shaped device manufactured from medical- grade silicon, rubber or

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thermoplastic elastomer (TPE), which is inserted into the vagina for collecting menstrual blood during menstruation.<sup>17</sup> To meet the unmet need for menstrual hygiene products, menstrual cup can be used as sustainable, cost effective solution and it also represent low chances of discomfort and infection than pads. With respect to the environmental safety and individual concern, menstrual cups provide a significant role in bridging the gap in menstrual hygiene access.<sup>1,3</sup> Certain projects such as Thinkal was initiated by the Kerala government in promoting menstrual cup. However, the usage of menstrual cup remains relatively low in Kerala and the underlying reasons for the limited adaptation are still not established. The study aims to find the proportion of women using menstrual cup and its determinants for non-use.

### Materials and Methods

Cross-sectional study was conducted during June 2022 to October 2022 among females of reproductive age group. A total of 310 menstruating women from the various parts of Kerala were invited to participate through an online platform. Sample size was estimated using the prevalence study on menstrual cup use which was found to be 24%<sup>1</sup>, a 95% confidence level and absolute error of 5% was used and a 10% nonresponse rate was considered.

Young females and women who were menstruating were included in our study. Women who haven't attained menarche, those having psychiatric disturbances, those who are bedridden, those who underwent hysterectomy, those who are pregnant, those who underwent sterilization procedures, those who have reproductive organ cancers, pelvic inflammatory diseases and other disease syndromes affecting menstruation were excluded from our study. A total of 310 women who fulfilled the criteria were participated. To collect data, a Self-administered questionnaire was prepared including demographic details such as age, residence, occupation, marital status and reproductive characteristics such as age at menarche, duration of bleed in a month, duration of menstrual cycle and the material worn during menstrual bleed. A checklist on acceptability (leakage, comfort, insertion, removal) and safety (vaginal irritation, vaginal pain when inserting and removing the cup, pelvic pain, allergies and rashes, physician-diagnosis of urinary tract infection, vaginitis. Initially the questionnaire was used among 20 medical students and reliability was assessed using Cronbach's alpha and found to be 0.827 which measures acceptable internal consistency in the questionnaire. Informed consent was obtained from all participants electronically and were assured of data confidentiality.

### Statistical analysis

The data was entered into Microsoft Excel version 2016 and coded accordingly. The data were analyzed via SPSS software version 16. Descriptive statistics for

sociodemographic characteristics and barriers to non-use of menstrual cup were summarized using frequencies and percentages. The associations between sociodemographic characteristics and menstrual cup use were examined via the chi-square test. A p value of less than 0.05 was considered statistically significant.

### Results

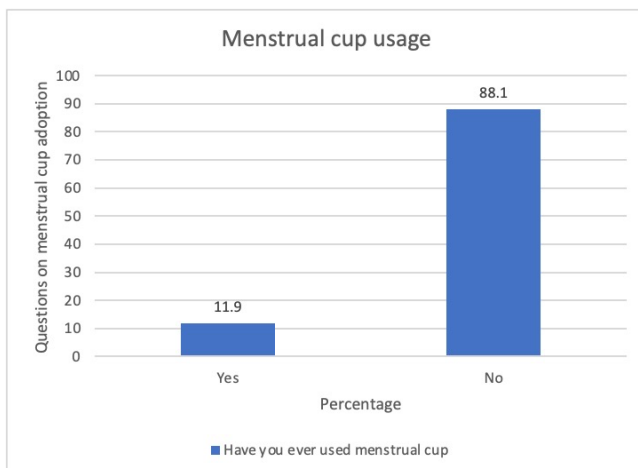
The mean age of participants was found to be 33.03±8.78 years. More than half of the participants were aged above 30 years and were living in urban area. Majority of them belonged to Above poverty line category. About one third of the participants were working women and third of them were married. The median age of menarche was at 13 years. Majority of them had menstrual bleed once a month and they mainly used pads compared to other sanitary products. Table 1 illustrates the sociodemographic characteristics. Fig 1 shows the proportion of women use menstrual cup. Almost 12% of women used menstrual cup.

**Table 1: Sociodemographic characteristics and Menstrual profile of the participants**

Characteristics	Frequency(percentage)
<b>Age group</b>	
15-30 years	145(46.8)
31-49 years	165(53.2)
<b>Residence</b>	
Rural	92(29.7)
Semiurban	62(20.0)
Urban	156(50.3)
<b>Colour of ration card</b>	
APL card	228(73.5)
BPL card	82(26.5)
<b>Occupation</b>	
School student	5(1.6)
College student	60(19.4)
Post graduate student	29(9.4)
Working women	113(36.5)
Homemaker	98(31.6)
Others	5(1.6)
<b>Marital status</b>	
Married	223(71.9)
Divorced	1(0.3)
Unmarried	77(24.8)

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Widow	9(2.9)
<b>Menstrual status</b>	
<b>Age of Menarche</b>	
11	23(7.4)
12	96(31.0)
13	103(33.2)
14	66(21.3)
15	22(7.1)
<b>Menstrual bleeding episodes per month</b>	
Once	303(97.7)
Twice	7(2.3)
<b>Duration of menstrual bleeding per month</b>	
2-4 days	148(47.7)
5-7 Days	154(49.7)
>7 Days	8(2.6)
<b>Type of menstrual products used</b>	
Cloth	2(0.6)
Either pad or cloth	18(5.8)
Either pad or menstrual cup	21(6.8)
Menstrual cup	12(3.9)
Pad	257(82.9)



**Fig 1: Usage of menstrual cup among women**

The reason why many do not use menstrual cup was mainly due to habitual use of pads. More than half of them were reluctant to use new products.

**Knowledge related barriers** -About 74% of women reported limited knowledge on correct positioning and inserting of the cups and 77% showed concern on maintaining proper hygiene.

**Safety and comfort concern** – A larger proportion were concerned about risk of infection (81.6%), fear of pain during insertion (72.3%), menstrual leakage (71.3%), impaction of cup in vagina (68.1%) and comfortability in wearing (73.5%).

**Practical challenges** – Difficulty in cleaning the cup (63.2%), Unpleasant odour while use (70.3%), fear of interference with daily living activities (68.4%) and half of them perceived menstrual cup were costly.

**Table 2: Factors influencing menstrual cup non-use**

Characteristics	Agree	Disagree
Habitual use of disposable menstrual products (e.g. pads)	293(94.5)	17(5.5)
Reluctance to try new menstrual products	195(62.9)	115(37.1)
Limited knowledge regarding correct insertion and positioning	229(73.9)	67(21.6)
Concern about comfort while wearing menstrual cup	228(73.5)	82(26.5)
Fear of pain during insertion or use	224(72.3)	86(27.7)
Anxiety about menstrual leakage	221(71.3)	89(28.7)
Difficulty in cleaning the cup	196(63.2)	114(36.7)
Worries about unpleasant odour during use	218(70.3)	92(29.7)
Concern about risk of infections	253(81.6)	67(18.4)
Fear of cup getting impacted in vagina	211(68.1)	99(32.0)
Concern about maintain proper hygiene	239(77.1)	71(22.9)

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Fear of interference with daily living activities*	212(68.4)	98(31.6)
Perceived high cost of menstrual cup	156(50.3)	154(49.7)

\*Daily living activities such as difficulty in sleeping at night, difficulty while doing physical activity such as running, jogging and dancing, difficulty while sitting

A statistically significant difference was observed between age group and menstrual cup use. Women aged less than 30 years had more menstrual cup use. Residence, Poverty line category, occupation and marital status did not show any statistical significance. But those who were single and hold APL card had used menstrual cup.

**Table 3: Association between sociodemographic characteristics and menstrual cup use**

Age group	Menstrual cup ever used	Menstrual cup Never used	P value
15-30 years	31(21.4)	114(41.8)	<0.001
31-49 years	6(3.6)	159(58.2)	
<b>Residence</b>			
Urban	20(12.8)	136(87.2)	0.629
Semiurban/Rural	17(11.0)	137(89.0)	
<b>Colour of ration card</b>			
APL	31(13.6)	197(72.2)	0.133
BPL	6(7.3)	76(16.2)	
<b>Occupation</b>			
Employed	11(9.7)	102(37.4)	0.365
Unemployed	26(13.2)	171(86.8)	
<b>Marital status</b>			
Single	13(14.9)	74(85.1)	0.308
Married	24(10.8)	199(89.2)	

### Discussion

The current study reveals that less than one fifth of the women ever used menstrual cup. Single women, less than 30 years of age, holding APL card, unemployed probably students had ever tried using menstrual cup. The most common factor for hinderance in using menstrual cup were habitual use of pads, fear of infections, lack of knowledge on insertion and positioning, menstrual leakage and fear of pain during insertion.

In a developing country like India where the economic burden as well as environmental pollution is drastically high because of sanitary napkins. Introduction of menstrual cup is a blessing as it is the eco-friendliest and cost-effective product, but many are unaware of its benefits even though its easily available in pharmaceutical market without prescription. Due to cultural beliefs about hymen or fear of insertion, schoolchildren, particularly those aged 10 to 19,

were less likely to use it. Likewise, older adults (40–49 years old) were less likely to utilize it because of premenopausal symptoms. Similar phenomenon was mentioned in a study by Ghanshamnani L et al. on the prevalence of common urogenital infections among menstrual cup users, however they claimed that women aged 30 to 39 were the best candidates to use the cup symptoms such as rash, itching, abdominal pain, foul smelling white discharge and burning sensation were relieved.<sup>18</sup> According to Kakani CR et al cup was favoured because it was comfortable, dry and had less odour and it was simple to insert and remove.<sup>19</sup>

Limited knowledge on how to insert the cup was a major barrier to menstrual cup use. At first, the cup should be folded before insertion and is then allowed to string open forming a seal against vaginal wall. While removing the base of the cup is pinched and the product moved gently side to side while pulling down. Smaller the cup pressure from the vaginal wall. prevents the menstrual cup from unfolding and will lead to leaking. Larger the cup, uncomfortable to wear, also it could cause injury.<sup>20</sup> Menstrual leakage can be prevented if proper size of cup is worn. Study by Sreedevi C et al reported that women who used menstrual cup for 6 consecutive cycles were studied proved that on wearing the cup initially was difficult but on consecutive cycles especially after second cycle, it became simpler and easier.<sup>21</sup> At least with 3 cycles, the adaptability to a newer product would always be difficult even if it is not menstrual cup and so the hindrance with the daily living activities could be managed. The uneasiness and improper fitting can be resolved with proper training. Unpleasant odour, vulnerability to infection and impaction in vagina is a myth as several studies have proved that with the use of menstrual cup such problems are rectified and so fear of acquiring it is of no use. Medhi A et al mentioned that among those who used menstrual cup, majority of them felt comfortable and they felt it was cheaper than other menstrual products.<sup>22</sup>

### Conclusion

Hardly a handful of women use menstrual cup, mainly due to lack of knowledge in insertion and positioning, habituated with pads use and fear of discomfort and pain on using it. Younger women and those living in urban areas were more menstrual cup users. Awareness on menstrual cup and its merits has to be improved by training and awareness programmes at schools, colleges, panchayats and public places. Increasing the reach on social media platforms such as news, advertisements, Facebook, messengers, YouTube etc. would create a positive attitude towards to its use.

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