

Original Research Article

Acceptability and feasibility of using menstrual cups as an alternative menstrual hygiene product: a tertiary care-based prospective study

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ABSTRACT

Background: Menstrual hygiene remains a vital yet often overlooked aspect of women's health, particularly in resource-limited settings where cost, access, and sustainability pose significant challenges. Menstrual cups offer a reusable, eco-friendly, and cost-effective alternative, but their adoption in India is hindered by social, cultural, and practical concerns.

Methods: This prospective observational study was conducted at a tertiary care center in Chennai from September 2022 to April 2024. A total of 200 first-time menstrual cup users were enrolled following education on proper use. Participants were followed for three consecutive menstrual cycles. Data on demographics, menstrual history, and experiences were collected using pre-tested questionnaires and Likert scales. Statistical analysis was performed using SPSS version 22.

Results: Of 434 women initially surveyed, 200 completed the study. Most were aged 21-30 years (51%), married (57%), and graduates (46%). At baseline, 82.5% used sanitary napkins, with common issues being leakage (41%) and rashes (34.5%). Across three cycles, ease of insertion improved from 72% to 85%, removal from 72% to 82%, and comfort from 90% to 98%. Leakage decreased from 17% to 5%. By the third cycle, 96.5% intended to continue use, and 96% would recommend it to others.

Conclusions: Menstrual cups demonstrated high feasibility and acceptability, with progressive improvement in comfort and reduced leakage. Educational initiatives could play a key role in increasing adoption, offering a sustainable and effective solution for menstrual hygiene management (MHM).

Keywords: Menstrual cups, Menstrual hygiene management, Sustainable menstrual products, Women's health, Menstrual health, Reusable menstrual products

INTRODUCTION

In line with the world health organisation (WHO) health definition, menstrual health constitutes access to accurate information on menstruation, apart from facilities and a stigma-free environment for better menstrual hygiene. Despite the physiological nature, young adolescents and women face many challenges during menstruation, affecting their overall quality of life.¹ In a resource-poor

setting, MHM, which requires basic infrastructure like access to soap and water, apart from appropriate and affordable hygienic products, can be challenging. Unhygienic clothes during menstruation can have adverse effects like restricted movement due to concerns of leaking and odour, infections etc.²

In today's world of reducing, reusing, and recycling, sustainable menstruation is a high priority necessitating the use of menstrual products benefiting the body as well

as the earth.³ With regards to better affordability and hygiene, menstrual products like sanitary pads, tampons, and menstrual cups were introduced and accordingly, they showed improvement in menstrual hygiene. Of these, disposable sanitary pads gained widespread popularity, still with some issues related to leakage, disposal, as well as monthly expenditure.⁴

The menstrual cup, is a menstrual hygiene device that is inserted into vagina for collecting blood, and is made of medical grade silicone, which is inert. It provides the option of reuse for about 10 years, which makes it affordable, apart from being a safe and an eco-friendly alternative.^{3,5} Although patented as early as 1867 in the US, menstrual cups are yet to gain the due recognition. Also, factors like lack of awareness, cultural taboos, and practicality concerns in professional settings deter their popularity among those women who are working, in particular.^{5,6}

The objective of the study was to find out the acceptance rate of menstrual cups as an alternative menstrual hygiene product by first time users. Continuation of usage of menstrual cup after 3 cycles. Assessment of level of comfort by using Likert scale at the end of 3 cycles.

METHODS

This prospective observational study was conducted at Sri Ramachandra institute of higher education and research, Chennai from September 2022 to April 2024 among a sample of 200 women, who were first-time users of menstrual cup. This study was started after obtaining the approval from the ethical committee of Sri Ramachandra university, with ethics number: CSP-MED/22/AUG/79/112. After explaining about the study and obtaining written informed consent, creating awareness regarding menstrual cups and their usage to women interested in participating in the study was done using a video and by conducting an educational talk.

The menstrual cup sizes varied from small (16 ml), regular medium (22 ml), and regular large (30 ml), and were used by the study subjects based on the appropriateness and were advised to follow all the instructions given during the demonstration regarding the insertion, removal, and cleaning of the cup at the end of every menstrual cycle. Later, a survey questionnaire was applied to collect the data regarding menstrual history and other details. Following the initial survey, the women were then followed up for 3 months and feedback was collected using a Likert rating scale to measure perceptions on menstrual cup usage at the end of every menstrual cycle for three consecutive cycles.

Compilation of data from google forms was done and further assessed using SPSS version 22. Data was presented in frequencies and percentages, with use of graphs wherever necessary.

RESULTS

Of the 434 women surveyed, 186 women (42.8%) expressed satisfaction with the various methods for menstrual hygiene. After excluding these women, among the 248 women (57.2%) contacted for the usage of menstrual cup, it was further noted that 48 women reported either loss to follow up or discontinuity in the usage. For analysis of the various parameters related to menstrual cup usage, these 200 women with the usage of menstrual cup for the three consecutive menstrual cycles were considered (Figure 1).

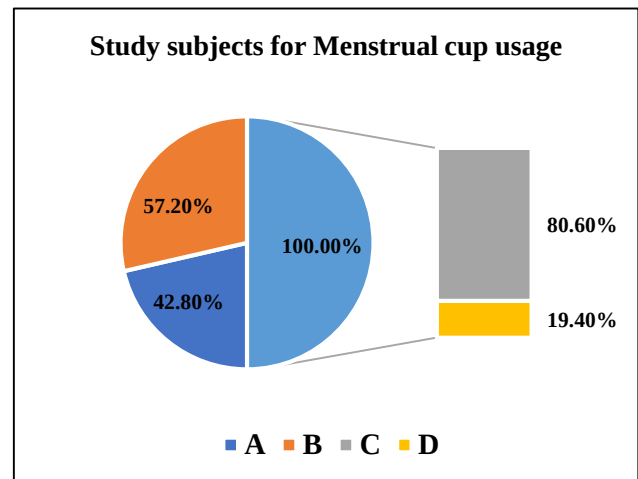


Figure 1: Considering of the study subjects for menstrual cup usage, (n=434).

*A=% Satisfied with current MHM products; B=% selected for menstrual cup usage, C=% followed up till 3 months and D=% loss to follow up.

Demographic details showed that most were in the 21-30 years age group (51%), most were married (57%), and graduates were 46% among 200 study subjects (Table 1).

Table 1: Demographic details of study participants, (n=200).

Variables	N	Percentages (%)
Age (in years)		
<20	59	29.5
21-30	102	51.0
31-40	28	14.0
>40	11	5.5
Marital status		
Unmarried	86	43.0
Married	114	57.0
Education		
Graduate	92	46.0
Others	108	54.0

With regard to the menstrual cycle details among the study subjects, most had regular blood flow (80.5%), most common product used previously for menstrual hygiene was sanitary napkin (82.5%), most incurred

expenses around Rs. 1000-1500 annually on menstrual hygiene (48%), and most common problems faced with the previous menstrual products were leakage (41%) and rash (34.5%) (Table 2).

Table 2: Details related to previous menstrual cycle among study participants, (n=200).

Variables	N	Percentage (%)
Blood flow		
Regular	161	80.5
Scanty/heavy	39	19.5
Previously used products during menstrual cycle		
Sanitary napkin	165	82.5
Others	35	17.5
Annual expenses on menstrual hygiene		
<Rs. 1000	74	37.0
Rs. 1000-1500	96	48.0
>Rs. 1500	30	15.0
Problems faced with previous menstrual products		
Leakage	82	41.0
Rash	69	34.5
Infections	31	15.5
Disposal issues	28	14.0

After following up of the study subjects for three consecutive menstrual cycles, various aspects regarding their experiences with the use of menstrual cup were assessed. It was observed that the overall experience was good regarding this experience with the menstrual cup and even showed better improvement with time.

At the end of the first cycle, with regard to cup insertion and removal, 72% and 72% respectively felt the ease, which was further increased to 85% and 82% respectively, at the end of third cycle.

Similarly, ease in cleaning the cup and comfort of usage improved from 89% to 97.5% and 90% to 98% respectively from first to third cycle. Leakage problem was seen only among 17% at the end of first cycle, which was further decreased to 5% at the end of third cycle (Table 3).

After the menstrual cup usage for a considerable period of three cycles, most had better perception regarding menstrual cup usage. Majority (94.5%) felt very comfortable or comfortable with the cup usage, 96.5% were willing to continue the cup usage, and 96% were willing to recommend the menstrual cup to others (Table 4).

Table 3: Comparison of various aspects of menstrual cup usage with the 3 cycles, (n=200).

Variables	Menstrual cycle					
	Cycle 1		Cycle 2		Cycle 3	
	N	%	N	%	N	%
Ease of cup insertion						
Easy	144	72.0	157	78.5	170	85.0
Not so difficult	40	20.0	33	16.5	26	13.0
Difficult	16	8.0	10	5.0	04	2.0
Ease of cup removal						
Easy	144	72.0	154	77.0	164	82.0
Not so difficult	38	19.0	33	16.5	34	17.0
Difficult	18	9.0	13	6.5	02	1.0
Ease of cleaning the cup						
Easy	178	89.0	187	93.5	195	97.5
Not so difficult	13	6.5	09	4.5	04	2.0
Difficult	09	4.5	04	2.0	01	0.5
Comfort of usage						
Yes	180	90.0	188	94.0	196	98.0
No	20	10.0	12	6.0	04	2.0
Leakage problem						
Present	34	17.0	22	11.0	10	5.0
Absent	166	83.0	178	89.0	190	95.0

Table 4: Perception about menstrual cup usage among study participants, (n=200).

Variables	N	Percentages (%)
Level of comfort felt upon usage		
Very comfortable	39	19.5
Comfortable	150	75.0
Uncomfortable	08	4.0
Very uncomfortable	03	1.5

Continued.

Variables	N	Percentages (%)
Willing to continue the usage		
Yes	193	96.5
No	07	3.5
Would suggest to others		
Yes	192	96.0
No	08	4.0

DISCUSSION

In comparison to the traditional menstrual products, menstrual cups have many health, environmental and financial benefits. As they are made up of medical grade silicone or latex material, these cups are less toxic and will not interfere with the natural pH balance of the vagina. Also, one time investment of the cups makes them cost-effective, and reusable nature helps in saving the money and the environment as well.⁷

In the present study, most women were satisfied with their experience with the menstrual cup in maintaining the menstrual hygiene, and even the good perception improved with every cycle, particularly with regard to the cup insertion and removal, cleaning the cup, comfort of usage, and minimal leakage problems.

Jamkhandi et al study reported an awareness level regarding menstrual cup as 93.5%, and social media was the major source of information (75%). Those who were already using the cups were 5.9%. Fear of insertion (31%) and lack of knowledge of correct insertion method (45%) was the major reason for not using the cup. Willingness to change over to use cup was seen in 75% non-users.³ A study from Nepal reported a positive perception regarding menstrual cup usage, and benefits as perceived by the participants included able to attend to routine classes without worrying about MHM, easy usage, economic and environment friendly. Discomfort included pain during insertion, constant feeling of urge to urinate and leakage.² In Fidos et al study, though the awareness was 45%, menstrual cup usage was only 20%. Higher education of participants and better information on the advantages of menstrual cups were significantly associated with greater awareness and willingness to use menstrual cups.⁶ From Patel et al study, menstrual cup was found to be more economical, safe, convenient, and environment friendly compared to sanitary pads, and motivation to use cups was linked to the prior bad experience with sanitary pad. However, concerns raised were regarding accessibility to cups, availability of appropriate size cup and support system for guidance and awareness.⁴ From Aparnavi et al study, 31.4% had recent shift from cloth to pads, because of leakage and washing issues. Only 6.1% had tried modern menstrual methods, with tampons and menstrual cups being considered more suitable but less feasible, especially among tribal women.¹ From Kakani et al study, it was observed that the cup was preferred for comfort, dryness, and lack of odour, ease of insertion and removal being 80% and 90% among the participants. Problems

like leakage, rash, infection etc. were perceived by few participants.⁵ Another study among doctors showed that 3.6% were not aware of menstrual cups, and only 61.6% had good knowledge about menstrual cups. Also, the usage was only among 4.4% doctors, with majority using sanitary pads (89.6%).⁸ In a comparative study between sanitary pad and menstrual cup usage, cup usage increased from 39% to 80%, and pad usage rose from 85% to 92%. Initial problems with cup usage were overcome over time.⁹ From Gharacheh et al study, it was found that the overall satisfaction with the cup usage was good and leakage was reported by 83%. Most (83.9%) were familiar with the cup by social networks and 98.6% recommended menstrual cups to others.¹⁰ Review by Ejik et al on menstrual cup usage reported no adverse effects with cup usage, with a few requiring professional assistances in the removal of menstrual cup.¹¹ Sreedevi et al study reported that most were informed of menstrual cups by friends or online sources. Ease of insertion and removal became significantly easier with repeated usage. Improvement in work participation and attendance, apart from economic and health benefits were reported by most, and only few reported allergies, infection etc.¹² A review on menstrual cup usage by et al showed the acceptability rate for menstrual cup between 35-90%. It was found more comfortable compared to tampons and pads. Continued cup usage was found in 48-94%. Higher expulsion risk was found among IUD users.¹³ Kolil et al conducted a study to assess the choice of menstrual hygiene product by developing a scale to measure factors like comfort, hygiene, convenience, and environmental consciousness. It was revealed that most preferred reusable products with comfortability, accessibility, and ease of usage and disposing.¹⁴ Shrivatsava et al study among medical graduates revealed significant increase in the knowledge about menstrual cups from 29.7% to 89.8% after an educational health intervention.¹⁵ A study on Turkish women reported significant difference with regard to employment status, sexual experience, menstruation experiences, pain during menstruation, social activity restrictions during menstruation, and recommending the product used to someone else among menstrual cup users compared to others.¹⁶ Nanjappan et al study reported poor awareness of the menstrual cup among most respondents (76.9%).¹⁷ Similar to the present study, Hennegan et al study from Australia reported an improvement in the menstrual cup usage with the consecutive cycles.¹⁸ Cluster analysis for customer segmentation for menstrual cup usage by Dangraa et al classified the women based on their awareness and willingness, and recommended presenting with more

compelling facts regarding its cost-effectiveness and eco-friendly nature to the aware and willing or indifferent clusters. Among the unaware cluster, extra effort should be put to break the myths apart from free sample distribution for acquaintance.¹⁹ A study from Western Kenya showed that cups or pads were not able to reduce the school dropout risk. However, infection rate was lower in the menstrual cup group compared to the sanitary pad or control groups.²⁰ Garg et al study reported most without any pain in insertion and removal of menstrual cup, and were confident about inserting, removing, washing and sterilizing the cup.²¹ Andrea et al study on the menstrual cup acceptability and perception reported that most women were neutral, and about 17% were negative towards their perception for menstrual cups. Factors like age, religion, education, marital status, type of family, monthly familial income and the education of both father and mother were found significant with the perception and acceptability among them.²² Seeli et al study on young unmarried students reported the awareness about menstrual cup was 83.8%, fear of usage was 71.4%, willing to recommended was 72.9%, and most felt it cost-effective.²³

A review by Pednekar et al found that the acceptability of the menstrual cup among students in higher education institutions had issues related to on ease of insertion and removal on first use. However, introduction of disposable and reusable menstrual products at school level was perceived as a good initiative among them. Further, it was recommended to address the barriers to sustainable menstrual products usage among the women.²⁴

The study had a few limitations; the moderately small study population was included in the study limiting the generalizability to a larger population. Additionally, the reasons for discontinuation of cup usage could not be elaborated upon. Participants initial difficulty in inserting and removing the cup correctly may have affected their overall experience. Social and cultural barriers may prevent some individuals from using menstrual cups highlighting the need for promoting more inclusive menstrual health practices.

CONCLUSION

Willingness of the women to accept and continue the usage of the menstrual cup in the present study shows the need for creating awareness and promoting the menstrual cup considering its eco-friendly, cost-effectiveness, easy handling and improvement in the women's menstrual hygiene.

Targeted approach among young adults through community-based programs as well as proper utilization of national programs will enhance the reach and adoption of the product and can also form an indirect method of advocating MHM among reproductive age group women for better quality of life among them.

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