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## Original Research Article

# Comprehensive assessment of menstrual cup awareness and utilization among degree students

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## ABSTRACT

**Background:** Menstrual hygiene management poses significant challenges for girls in low-income environments, particularly in educational settings, where cultural norms, inadequate knowledge of recommended hygiene practices, and restricted access to affordable menstrual products hinder effective menstrual care. The vaginal menstruation cup emerges as a potential alternative to traditional sanitary pads or tampons, offering a sustainable and cost-effective solution.

**Methods:** The research approach was quantitative research, and the research design adopted was a one-group pre-test and post-test design. The study was conducted among college students at selected colleges in Suryapet. The sample size was 60. The non-probability purposive sampling technique was used.

**Results:** Assessment of knowledge was done using a self-administered questionnaire, and practice was done using an observational checklist. Analysis showed that the pre-test mean knowledge score was  $5.61 \pm 1.16$  and the post-test mean knowledge score was  $17.86 \pm 1.46$ . The pre-test mean practice score was  $2.79 \pm 1.18$ , and the post-test mean practice score was  $10.37 \pm 1.36$ . Analysis also reveals that ( $r = 0.340$ ,  $p = 0.009$ ) a positive correlation was found between the knowledge and practice scores of students regarding menstrual cups. Analysis also reveals the calculated 't' value for knowledge, i.e., 49.52, which shows the demonstration of knowledge regarding menstrual cups among college students was effective. The calculated 't' value for practice, i.e., 30.84, shows the demonstration in practice was effective.

**Conclusions:** The study concludes that knowledge scores were associated with age, type of family, and education. Therefore, by statistically interpreting the data, the demonstration of knowledge and practice regarding menstrual cups among college students was effective. Consequently, the alternative hypothesis is accepted.

**Keywords:** Knowledge, Menstrual cup, Menstrual hygiene, Students

## INTRODUCTION

Menstruation, a natural and physiological process experienced by women, underscores the importance of safe, efficient, and cost-effective menstrual hygiene products. This is particularly crucial for adolescents and women enduring prolonged periods of menstruation. Among the array of menstrual hygiene products available, including tampons, sanitary pads, cloths, and menstrual

panties, menstrual cups have emerged as a noteworthy alternative.<sup>1</sup> In a world where almost 1.9 billion women are of reproductive age, with over 800 million menstruating daily, exploring innovative and sustainable solutions becomes imperative. The concept of menstrual cups dates back to 1937 when Leona Chalmers introduced the first commercially viable cup. Subsequent inventions in 1935, 1937, and 1950 further refined the design, marking milestones in the evolution of menstrual cups.<sup>2</sup>

Unlike disposable alternatives, menstrual cups are reusable containers made of materials such as silicone, natural rubber, or thermoplastic elastomers (TPE). Worn vaginally, these cups can effectively hold menstrual blood for up to 12 hours before requiring removal, cleaning, and replacement. The versatility of menstrual cups is evident in their various shapes and customization options, including spill-proof lips and valves.<sup>3,4</sup> Functioning similarly to tampons but without absorption, these cups offer a menstrual hygiene solution with a capacity ranging from 10 to 38 ml.<sup>5</sup> Unlike tampons, menstrual cups come in diverse sizes, shapes, and firmness's, catering to individual preferences and needs.<sup>6</sup> Notably, the use of menstrual cups reduces the risk of infections like Toxic Shock Syndrome (TSS) and other serious health issues associated with traditional absorbent products. Studies reveal that users typically become comfortable with menstrual cups after two to three cycles of use, highlighting the adaptability of this innovative menstrual hygiene solution.<sup>7</sup> While menstrual cups may present an initial cost compared to other menstrual hygiene management (MHM) products like sanitary pads, their durability stands out.<sup>8</sup> Lasting several years, menstrual cups provide a sustainable and cost-effective option in the long run. Although early designs faced challenges in gaining widespread recognition, the introduction of products like the Moon Cup in the late 1990s in the UK and the Diva Cup in Canada in the early 2000s marked significant strides in making menstrual cups more accessible to a global audience.<sup>9</sup>

### **Background of the study**

Menstruation, a physiological process unique to women, marks a significant developmental milestone during adolescence with the onset of menarche. The hygiene practices women adopt during menstruation are crucial for their health, influencing susceptibility to reproductive tract infections.<sup>10</sup> Menstruating women are treated as impure, taboo, and contaminating in Niddah beliefs. In general, religious influence permeates popular menstrual discourse and adds to the general public's negative perception of menstruation.<sup>11</sup> Notably, 62% of young Indian women aged 15 to 24 continue to rely on clothing to manage their monthly periods.<sup>12</sup> This reliance poses a challenge, particularly for men, who often serve as household breadwinners, as societal stigma surrounding menstruation impedes the prioritization of menstrual hygiene.<sup>13</sup> A pivotal aspect of effective menstrual hygiene management (MHM) lies in the accessibility of reasonably priced and adequate sanitary supplies designed for absorbing or collecting menstrual flow. The menstrual cup, introduced in the 20th century, employed various business strategies that contributed significantly to its widespread acceptance as an economical and eco-friendly alternative to disposable products. The 21st century witnessed a global surge in the popularity of menstrual cups, with numerous brands entering the market to cater to diverse consumer preferences in terms of sizes, shapes, and materials. Menstrual cups are as good as disposable tampons and

pads at stopping leakage. Regulatory bodies, including the United States Food and Drug Administration, have subsequently approved several menstrual cup brands after rigorous evaluation, affirming their safety and satisfying consumer expectations. In contrast to the conventional use of disposable pads, a substantial percentage of women, ranging from 43% to 88%, opt for the washing and reuse of cotton cloths.<sup>14</sup> Recognizing the persisting gap in awareness and understanding, the researcher identified a need to implement a video-assisted teaching program on menstrual cups. This educational initiative targets degree students in selected colleges, aiming to enhance their comprehension of the accessibility and sustainability aspects associated with menstrual cups.<sup>15</sup>

### **Need of the study**

The study on the effectiveness of a structured teaching program regarding menstrual cups among degree students in selected colleges is significant for several reasons:

#### *Low adoption rates in India*

The fact that only 0.3% of women between the ages of 15 and 24 in India use menstrual cups highlights a significant gap in awareness and acceptance. Understanding the reasons behind this low adoption rate is crucial for promoting sustainable and healthier menstrual hygiene practices.<sup>16</sup>

#### *Environmental impact*

Menstrual cups are more environmentally friendly as they are reusable, leading to a reduction in landfill waste compared to disposable pads. Investigating the reasons behind the preference for disposable products over menstrual cups can contribute to efforts to promote eco-friendly menstrual hygiene practices.<sup>17</sup>

#### *Health and hygiene concerns*

Menstrual cups, if used correctly, can reduce the risk of infections. Understanding the factors influencing the choice of menstrual hygiene products, and how education and awareness can impact these choices, is essential for promoting better health practices among women.<sup>18</sup>

#### *Social and cultural factors*

Researching the reasons behind the cultural hesitations or social stigmas associated with menstrual cups can provide insights into the barriers preventing their widespread adoption. Addressing these issues can contribute to breaking taboos and promoting healthier practices.

#### *Public health impact*

Promoting the use of menstrual cups aligns with public health goals by reducing waste and promoting sustainable

practices. Understanding the barriers to adoption can lead to strategies that enhance overall public health outcomes.<sup>19</sup>

#### *Education and awareness*

The teaching programs in changing attitudes and behaviors towards menstrual cups. Understanding how education can play a role in breaking misconceptions and encouraging the use of sustainable menstrual products is crucial for designing effective awareness campaigns.<sup>20</sup>

#### *Practical convenience*

Investigating the practical aspects of using menstrual cups, such as the convenience and comfort they offer, can contribute to understanding why some women find them more appealing than traditional disposable products. This knowledge can be used to tailor education programs to address concerns and misconceptions.<sup>21</sup>

The objectives of this study were to assess the baseline knowledge of college students regarding menstrual cups, to evaluate the current practices and attitudes of college students toward menstrual cup usage. Also, to assess the effectiveness of existing educational programs on menstrual health among degree students, and to measure the impact of the educational program on the knowledge and practices of college students regarding menstrual cups.

## METHODS

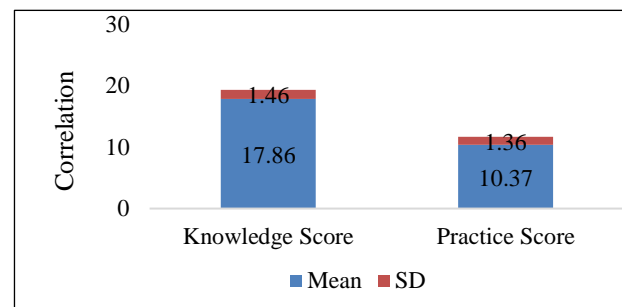
The study used a quantitative methodology, more precisely the one-group pre-test and post-test a quasi-experimental design. The study was conducted among (Triveni and Sai Gowthami) degree colleges are located in Suryapet (November 2023 - February 2024), with a sample size of 60 students.

Non-probability purposive sampling technique was used for the collection of data. The tools were used in the data-collecting process a self-structured questionnaire that evaluated by both descriptive and inferential statistical techniques were used in the study's analysis knowledge and practice about menstrual cups and a semi-structured questionnaire that focused on demographic data. On the first day of the collecting procedure, pre-test knowledge and demographic characteristics were evaluated. After that, on day three, there was a demonstration program, and on day seven, post-test knowledge was evaluated. Both descriptive and inferential statistical techniques with Microsoft Excel tool were used in the study's analysis and interpretation of the data that was collected.

## RESULTS

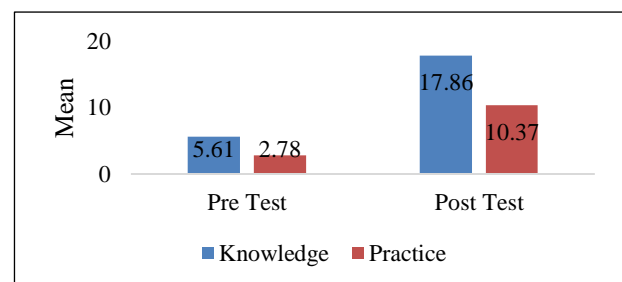
A comparison of knowledge and practice scores among degree college students regarding menstrual cup usage is presented. Both descriptive and inferential statistical techniques were used in the study's analysis the mean knowledge score was 17.86, and the mean practice score

was 10.37, with associated standard deviation values. Mean difference values were assessed, and a paired t-test was conducted at a significant level of 5%. With a sample size of 60 (degrees of freedom 59), the tabulated 't' value was 2. The calculated 't' value of 0.340 exceeded the tabulated value at a 5% significance level for the overall knowledge score among degree college students, indicating statistical significance. Notably, the practice score was found to be statistically lower than the knowledge score. As a result, it is statistically concluded that the instructional program on knowledge and practice scores regarding menstrual cup among degree students was effective. Consequently, the research hypothesis is accepted (Figure 1).



**Figure 1: Correlation analysis of knowledge and practice scores regarding menstrual cup among degree students.**

Displays the comparison of pre-test and post-test knowledge and practice scores of degree college students regarding menstrual cups. It indicates an improvement in mean values in the post-test. Mean, standard deviation, and mean difference values were compared, and a paired t-test was conducted at a 5% significance level. With a sample size of 60 (i.e., 59 degrees of freedom), the tabulated value was 2.00. The calculated 't' values of 49.52 and 30.84 for knowledge and practice, respectively, far exceeded the tabulated value at a 5% significance level for overall knowledge and practice scores among degree college students, which is statistically acceptable. Therefore, it is statistically concluded that the instructional program on knowledge and practice regarding menstrual cups among degree students was effective, leading to the acceptance of the research hypothesis (Figure 2).



**Figure 2: The mean knowledge and practice scores regarding menstrual cups among degree students: pre-test vs. post-test.**

The demographic variables analyzed in this study include student Age, Religion, Type of family, Living Residential area, and Parents' educational status, as detailed in Table 1. The data reveals that the majority of students fall within the age range of 22 to 23 years. Religious affiliations predominantly consist of Hindu and Christian

denominations. Family structures predominantly align with the nuclear model. Residential areas are primarily situated in Villages and Rural regions. Furthermore, a significant portion of parents have attained Graduate-level education.

**Table 1: Demographic data of degree college students.**

Demographic variables				
Age (years)	18-19	20-21	22-23	Above 24
	0	13	39	8
Religion	Hindu	Muslim	Christians	Others
	30	7	20	3
Type of family	Nuclear	Combined	Single parent	Adopted
	38	7	14	1
Residential area	Rural	Urban	Village	City
	18	12	20	10
Parents educational status	Primary	Secondary	Graduation	Illiterates
	18	10	29	3

**Table 2: Association of post-test knowledge score with selected demographic variables (n=60).**

Demographic variables	Calculated value			Df	Table value	Level of significance P < 0.05	Significance
	t-value	F- value	p- value				
Age	3.75	-	0.0001	58	2.00	<0.05	S
Religion	-	1.00	0.42	4,55	2.51	>0.06	NS
Type of family	-	5.44	0.007	2,57	3.15	<0.05	S
Residential area	2.89	-	0.001	57	2.00	<0.05	S
Parents educational status	-	1.82	0.13	4,55	2.52	>0.06	NS

Keys: S-Significant, NS-Not significant

**Table 3: Association of post-test practice score with selected demographic variables (n=60).**

Demographic variables	Calculated value			Df	Table value	Level of significance P<0.05	Significance
	t-value	F-value	p-value				
Age	6.09	-	0.0001	58	2.00	<0.05	S
Religion	-	2.15	0.085	4,55	2.52	>0.06	NS
Type of family	-	3.16	0.0001	2,57	3.16	<0.05	S
Residential area	1.47	-	0.14	58	2.00	>0.06	NS
Parents educational status	-	3.15	0.023	4,55	2.52	<0.05	S

Keys: S-Significant, NS-Not significant

Indicates that there is an association between post-test knowledge score and certain demographic variables, namely age, type of family. However, variables such as religion, area of residence, and parents education status were not associated. This suggests that age, type of family influence the knowledge of menstrual cups among degree college students (Table 2).

Indicates an association between post-test practice score and specific demographic variables, including age, type of family, and parent's educational status. However,

variables such as religion and residential area showed no association. This suggests that age, type of family, and education play a role in influencing the practice of menstrual cup usage among degree college students (Table 3).

In summary, the instructional program was effective in improving both knowledge and practice scores among degree college students regarding menstrual cup usage. Additionally, demographic variables such as age, type of family, and education were found to be associated with

knowledge and practice scores, indicating their influence on menstrual cup awareness and utilization.

## DISCUSSION

The women who attended the awareness session quickly adopted the menstrual cup, underscoring the importance of such sessions in dispelling fears and concerns. Many who received the menstrual cup initially only began using it after attending these sessions or through word-of-mouth learning over a three-month period. Feedback from these sessions showed increased motivation and eradication of initial doubts. Women, particularly aged 25-45, showed higher acceptance rates. Only 20.7% of those who didn't attend the awareness session started using the menstrual cup, compared to 40.6% who did, indicating the effectiveness of prior knowledge. Common concerns included fear of insertion issues, urinary infections, and leakage, which were addressed through the sessions. Ultimately, 91.5% of beneficiaries expressed interest in using menstrual cup in the future, emphasizing the pivotal role of well-crafted awareness sessions in adoption.<sup>22</sup>

In this study majority of participants belonged to 21-30 years of age with nearly half of them presenting with under-graduation level of education and most belonging to the medical fraternity. Various studies assessing the menstrual hygiene have been conducted on participants belonging to adolescent school aged group who have attained their menarche. However, in the present study, all the women who are in reproductive group are included. Various studies have shown sanitary napkins to be used among majority of school going girls and adults which is similar to our study. The reason could be the lack of awareness and popularity of menstrual cup over sanitary pads and cloth among these age groups. Study in South India revealed that while 82% of participants had good knowledge about menstrual cups, only 6% had used them. Our study showed a similar pattern, with 64.75% having good knowledge but only 11.4% having used them. In a meta-analysis, 70% of adults expressed willingness to use menstrual cups, whereas in our study, only 33.5% were willing, possibly due to resistance to new products. Additionally, 68.7% knew that menstrual cups are made of silicone, and 87.6% considered them safe. However, 63.5% feared discomfort. A study in Gujarat found menstrual cups preferred among adults aged 20 to 50 for their ease of use, comfort, dryness, and minimal side effects. Similarly, 43.3% in our study found insertion and removal convenient, while 14% found it easy.<sup>23</sup>

This study has few limitations. The sample size in our study was relatively small, comprising only degree students from specific city-based colleges. Consequently, caution should be exercised when generalizing the findings beyond this specific group, as the results may not be representative of the broader population. The instrument used for data collection was developed specifically for this study, and standardized tool was not employed. This may introduce an element of subjectivity

and limit the comparability of our findings with studies utilizing established instruments. Moreover, our study focused solely on assessing the knowledge of degree students in select metropolitan colleges, reducing the scope for broader comparisons. The study design has inherent limitations, including a small sample size and a single-center approach. The absence of a multicenter perspective may restrict the generalizability of our results. Additionally, the majority of our questions were closed-ended, limiting participants' ability to express nuanced views. This design choice, while practical for data analysis, may have overlooked valuable qualitative insights.

## CONCLUSION

In conclusion, the present study on the effectiveness of educational program regarding menstrual cups is not only pertinent for addressing the low adoption rates but also for promoting sustainable, eco-friendly, and healthier menstrual hygiene practices in India. The insights gained from such a study can have implications for public health, environmental conservation, and women's well-being.

## Recommendations

Conduct similar research on a more diverse and representative population to enhance the generalizability of the findings. Ensure inclusion of participants from various demographics, socio-economic backgrounds, and cultural contexts to capture a comprehensive understanding. Evaluate the Impact of Experimental Studies on Adaptability and Efficacy, conduct additional studies to measure the long-term impact of using menstrual cups, focusing on adaptability and efficacy. Explore potential variations in adaptability and efficacy among different user demographics, considering factors such as age, socioeconomic status, and cultural practices. Undertake studies to evaluate the effectiveness of different informational approaches in conveying the adaptability and efficacy of menstrual cups. Investigate the influence of varied communication methods, such as visual aids, multimedia, and interactive sessions, on user comprehension and adoption. Based on the assessment of existing knowledge and practices, design and implement targeted interventions. Address identified gaps through educational programs, workshops, or campaigns tailored to specific demographics, ensuring a more effective dissemination of information.

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## REFERENCES

1. Pokhrel D, Bhattarai S, Emgård M, Von Schickfus M, Forsberg BC, Biermann O. Acceptability and feasibility of using vaginal menstrual cups among schoolgirls in rural Nepal: a qualitative pilot study. *Reproduct Heal.* 2021;18(1):1-0.
2. Saldon N, Bessy AM. A study to assess the level of knowledge regarding menstrual cup among women of reproductive age group in a view to develop an information pamphlet in a Selected Hospital, Bangalore. *Women's Health Sci J.* 2023;7(1).
3. George AM. Experiences of the women using menstrual cup on free will—A qualitative inquiry. *J Heal Alli Sci.* 2020;19(3).
4. Manley H, Hunt JA, Santos L, Breedon P. Comparison between menstrual cups: first step to categorization and improved safety. *Women's Health.* 2021;17:17455065211058553.
5. Van Eijk AM, Zulaika G, Lenchner M, Mason L, Sivakami M, Nyothach E, et al. Menstrual cup use, leakage, acceptability, safety, and availability: a systematic review and meta-analysis. *Lancet Publ Heal.* 2019;4(8):e376-93.
6. Sreedevi C, Jayasree AK, Shilu MZ, Divyamol N, Deepak KS. Experience and adaptability of menstrual cup as a menstrual hygiene management method among its users in Kerala. *Int J Commu Med Publ Heal.* 2022;2:918-23.
7. Warashinta DL, Astari AM, Merdikawati A. Analysis of the use of menstrual pad, tampons, and menstrual cup during menarche. *J Commu Heal Prevent Medi.* 2021;1(2):24-31.
8. Babagoli MA, Benshaul-Tolonen A, Zulaika G, Nyothach E, Oduor C, Obor D, et al. Cost-effectiveness and cost-benefit analyses of providing menstrual cups and sanitary pads to schoolgirls in rural Kenya. *Women's Health Reports.* 2022;3(1):773-84.
9. Akshitha MP. Statistical survey on various factors influencing the use of menstrual products with particular reference to menstrual cup (Doctoral dissertation, St Teresa's College (Autonomous), Ernakulam).
10. Kamira O, Rizkalla N. Indonesian Women perspective: the exploration of factors influencing the adoption of menstrual cup. *J Busi Manag Revi.* 2023;4(2):129-48.
11. Kubovski A, Cohen Shabot S. Experience of menstruation with the use of reusable menstrual products: a qualitative study among menstruators in Israel. *Cult Heal Sexual.* 2023;1-6.
12. Meghana S, Gomathy E. Knowledge, attitude, and practices regarding menstrual cup among reproductive women in a rural tertiary care Hospital. *Int J Clin Obstet Gynaecol.* 2021;5(2):211-4.
13. Madziyire MG, Magure TM, Madziwa CF. Menstrual cups as a menstrual management method for low socioeconomic status women and girls in Zimbabwe: a pilot study. *Women's Reproduct Health.* 2018;5(1):59-65.
14. Mason L, Nyothach E, Van Eijk AM, Obor D, Alexander KT, Ngere I, et al. Comparing use and acceptability of menstrual cups and sanitary pads by schoolgirls in rural Western Kenya. *Int J Reproduct Contracept Obstet Gynecol.* 2019;8(8):2974.
15. Shinde E, Rajan JK. A study to assess effectiveness of structured teaching program on knowledge regarding safe use of menstrual cup among adolescent girls of selected schools at Nashik. *Int J Nurs Medi Investigat.* 2023;55-9.
16. Sarkhel P, Bose M. Curative versus preventive healthcare in developing countries: the case of menstrual hygiene in India. Available at SSRN 3469445. 2018.
17. Mouhanna JN, Simms-Cendan J, Pastor-Carvajal S. The menstrual cup: menstrual hygiene with less environmental impact. *JAMA.* 2023;329(13):1114-5.
18. Kakani CR, Bhatt JK. Study of adaptability and efficacy of menstrual cup in managing menstrual health and hygiene. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(7):3045-53.
19. Jeppe Ottsen P. "We are not bad and we are not doing anything wrong": exploring girls' menstrual inclusion in India. Dissertation, SGED10. 2020.
20. Rastogi S, Khanna A, Mathur P. Educational interventions to improve menstrual health: Approaches and challenges. *Int J Adolesc Medi Heal.* 2019;33(5):20190024.
21. Castensson A. The Capability of Cups: A comparative field study in Uganda investigating the impact of menstrual cups on women and girls' achieved capabilities. 2018.
22. Varghese SD, Hemachandran KS, Parvathy J. Impact of imparting knowledge and awareness on the usage of menstrual cups: A study based on project 'Thinkal' at Alappuzha Municipality in Kerala. *Publ Heal Pract.* 2023;5:100352.
23. Kaushik S, Garg P, Agrawal H. A study about knowledge, awareness and practice about menstrual cup amongst the reproductive aged female staff of a tertiary care hospital. *Int J Acad Med Pharm.* 2023;5(5):1226-9.

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