Original Article

Awareness about Menstrual Cups and Hygiene amongst Undergraduate Medical Students of Government Medical College of Central India

Ayushi Shrivastava[1], Satish Saroshe[2], Vijay Khare[3], Shivam Dixit[4]

[1]PG Resident, Department of Community Medicine, M.G.M Medical College and M.Y. Hospital, Indore, [2]Associate Professor, Department of Community Medicine, M.G.M Medical College and M.Y. Hospital, Indore, [3]PG Resident, Department of Community Medicine, M.G.M Medical College and M.Y. Hospital, Indore, [4]Assistant Professor(Statistics and Demography)Department of Community Medicine, M.G.M Medical College and M.Y. Hospital, Indore.

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Abstract

Background: Menstrual hygiene management is a critical component of women's health, and it is imperative that medical students, future healthcare providers, possess a comprehensive understanding of menstrual cups. They have emerged as a sustainable and cost-effective alternative to traditional menstrual hygiene products. This study aims to assess the awareness and knowledge about menstrual cups and menstrual hygiene among medical students.

Material & Methods: A pre and post intervention study was conducted among female undergraduate medical students to assess their baseline knowledge and awareness of menstrual cups and menstrual hygiene. Subsequently, a targeted educational intervention, consisting of educational session and post-intervention assessment was conducted to assess changes in awareness.

Results: Majority were from 1st professional year and between age group 18-25 years**.** The impact of educational intervention can be assessed by the knowledge about menstrual cups being readily available at pharmacies which has also improved from 29.7% pre-intervention to 89.8% post-intervention, showing a significant improvement in knowledge($p<0.05$). The knowledge about menstrual cups being easy to use and acceptable had also increased from 32% to 86.7% post-intervention, showing a significant improvement in knowledge ($p<0.05$).

Conclusion: This study emphasises the significance of empowering the medical students to be advocates for improved menstrual hygiene practices. These findings contribute to the ongoing efforts to promote menstrual health and hygiene in India and underscore the need for further research and interventions in this crucial area of public health.

Keywords: Menstrual Cup, Menstrual Hygiene, Education Intervention

Corresponding Author: Vijay Khare, PG Resident, Department of Community Medicine, M.G.M Medical College and M.Y. Hospital, Indore.

E-mail: vjkhare24@gmail.com

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Introduction

For decades, MHM (Menstrual Hygiene Management) has been overlooked while the population health community understandably has focused its attention on issues related to adolescent girls' sexual and reproductive health, such as risks from HIV and other sexually transmitted infections, family planning, and contraceptive use. A growing focus on MHM from nongovernmental organizations, UNICEF, and other international agencies now highlights the profound impact of this problem on school-aged girls and provides the basis for a much-needed research, programming, and policy agenda.[1] The sensitive nature of the topic (menstruation) can pose challenges to utilizing particular research methods, emphasizing the importance of local collaborations and the incorporation of a range of research methods to assure the most valid set of data is acquired.[2] Menstrual cups have been available for decades, but their use in India is limited because of lack of awareness and popularity of sanitary pads. Since they are reusable, they reduce solid waste and are environment friendly.[3] MCs are reusable sanitary cups which are made of medical grade silicon, latex, or a thermoplastic isomer. These cups were first patented in the USA and presently almost 100 brands are available and marketed globally.[4] Made of high-grade medical grade silicone (biodegradable) have the advantage of reuse, and can potentially last up to 10 years.[5] It collects more blood than the standard sanitary pads and is environmentally friendly with few known side effects. The knowledge about menstrual cup will motivate the women to start using them as it is an ecofriendly, cost effective and sustainable method and will thereby promote menstrual hygiene[6]. Menstrual cup is one of the menstrual management products that is available throughout the world and can be effective in improving women's quality of life by empowering women in menstrual management.[10] The present study tries to assess the impact of educational intervention on knowledge about menstrual cups in the female undergraduate students at MGM Medical College, Indore (M.P.).

Aims and Objectives

The present study aims to explore the impact of an educational intervention on the awareness and knowledge of menstrual cups and menstrual hygiene among undergraduate medical students at MGM Medical College, Indore (M.P.). By focussing on this specific demographic, we seek to not only improve their understanding of menstrual health but also equip them with the knowledge and skills to educate and counsel their future patients effectively.

Furthermore, this research also shed light on the importance of addressing menstrual hygiene from a public health perspective and demonstrates how medical undergraduates can play a vital role in changing societal attitudes towards menstrual hygiene practices.

Material and Methods

- Study Design

We employed a descriptive longitudinal study design.

- Study Participants

By using convenience sampling, undergraduate medical students from various academic years were recruited for the study. Inclusion criteria included students currently enrolled at MGM Medical College, Indore and their willingness to participate in the educational intervention. The study was carried out from December 2022 to February 2023.

- Sample Size Calculation

The sample size was determined using the Cochran's formula:

$$n = Z^2 pq/d^2$$

Where:

n = required sample size

Z = Z-score (confidence level) at 95% confidence interval (1.96)

p = estimated proportion of undergraduate medical students with awareness about menstrual cups (taken as 82)[8-9]

d = margin of error (0.07)

After calculation, the minimum required sample size was determined to be approximately 130 participants.

- Educational Intervention

The educational intervention was based on review of existing literature on menstrual cups, menstrual hygiene and educational programs.

o A power-point presentation on menstrual cup usage and benefits.

o A discussion on menstrual hygiene practices.

o Q & A sessions

The educational intervention was conducted in a classroom setting over a two-hour session. It was designed to be an interactive session with open discussions.

- Data Collection

Pre-intervention Assessment

The participants completed a pre-intervention questionnaire which included the socio-demographic data and questions regarding the knowledge about the menstrual cups.

Post-intervention Assessment

Following the educational intervention, the same participants completed a post-intervention questionnaire that was identical to the pre-intervention assessment. This allows for a comparison of changes in knowledge and attitudes.

- Data analysis

Data collected through the questionnaires were coded, entered into a database and analysed using a statistical software SPSS version 25. Descriptive statistics such as frequencies and percentages were used to summarize the participant's socio-demographic characteristics, awareness levels and menstrual hygiene practices. Mcnemar test was used to compare pre and post intervention responses. A p-value of <0.05 was statistically significant.

Results

The results show that there were total of 128 students out of which 72 were from 1st prof, 26 from 2nd prof and 4 & 26 from 3rd and 4th prof respectively.

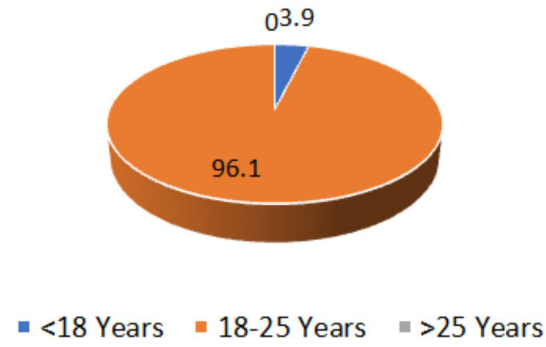

Fig 1: Agewise Distribution of Study Participants

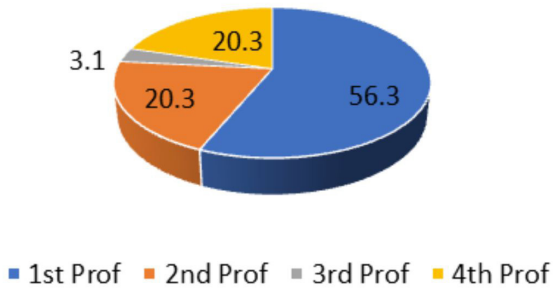

Fig 2: Batchwise Distribution of Study Participants

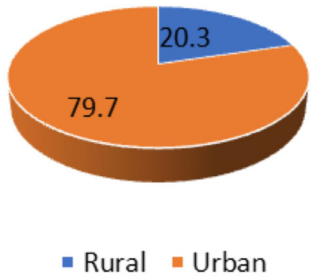

Fig 3: Urban/Rural distribution of participants

The results show that most of the female medical students had heard about menstrual cups (96.1%) prior. After educational intervention, this percentage increased to 98.4%. Majority of females got to know about menstrual cups from social media (72.66%) while some from friends (46.1%) and some (23.44%) from various advertisements. The impact of educational intervention can be assessed by the knowledge about menstrual cups being readily available at pharmacies which has also improved from 29.7% pre-intervention to 89.8% post-intervention, showing a significant improvement in knowledge($p<0.05$). The knowledge about menstrual cups being easy to use and acceptable had also increased from 32% pre-intervention to 86.7% post-intervention, showing a significant improvement in knowledge ($p<0.05$). Similarly, the knowledge

about menstrual cups being reusable and sustainable had also improved from 77.3% prior to educational intervention to 93.8% post-intervention.

The knowledge about self-administration of menstrual cups (self-insertion and removal of menstrual cups) has also shown a positive shift from 46.1% in pre-test to 92.2% in post-test result, showing a statistically significant improvement in knowledge($p<0.05$).

The results had shown that only 21.1% of female medical students had knowledge about side-effects of menstrual cups in the pre-test questionnaire which was increased to 88.3% in the post-test questionnaire, showing a statistically significant improvement in knowledge ($p<0.05$). In the post-test, 84.4% of individuals stated they could use the menstrual cups for up to 12 hours depending on the amount of flow in every cycle, compared to 21.2% in the pre-test and 57.8% of females had no knowledge about the duration for which the menstrual cup can be used in the pre-test. This shows a significant improvement in participants awareness about the duration for which the menstrual cups can be used.

The knowledge about the usage of menstrual cups while IUCD is inserted has shown a positive shift by 85.9% in post -test results from 25% in pre-test.

The awareness of how to properly clean menstrual cups has also improved, with 68% of participants agreeing that they should use soap and water after the intervention, compared to 56.3% who were unaware of this prior to the intervention. Also, the awareness about use of menstrual while doing physical exercise/playing sports has improved by 91.4% post-intervention from 33.6% in pre-test. The awareness regarding menstrual cups not stretching the vagina has also shown a statistically significant improvement from 26.6% in pre-test to 90.6% in the post-test (p-value <0.0001).

Table-1 Knowledge related questions on menstrual cup

1.1 Knowledge about menstrual cups					
	Post intervention			**Total**	**p-value**
Pre intervention	**Yes**	**No**	**Don't Know**		
Yes	121(94.5%)	1(0.8%)	1(0.8%)	123(96.1%)	0.407
No	4(3.1%)	0(0.0%)	0(0.0%)	4(3.1%)	
Don't Know	1(0.8%)	0(0.0%)	0(0.0%)	1(0.8%)	
Total	126(98.4%)	1(0.8%)	1(0.8%)	128(100.0%)	

1.2 Available at pharmacies					
Pre intervention	**Post intervention**			**Total**	**p-value**
	Yes	**No**	**Don't know**		
Yes	38(29.7%)	0(0.0%)	0(0.0%)	38(29.7%)	<0.0001
No	19(14.8%)	4(3.1%)	0(0.0%)	23(18.0%)	
Don't know	58(45.3%)	6(4.7%)	3(2.3%)	67(52.3%)	
Total	115(89.8%)	10(7.8%)	3(2.3%)	128(100.0%)	

1.3 Reusable					
Pre intervention	**Post intervention**			**Total**	**p-value**
	Yes	**No**	**Don't Know**		
Yes	95(74.2%)	4(3.1%)	0(0.0%)	99(77.3%)	<0.0001
No	7(5.5%)	2(1.6%)	0(0.0%)	9(7.0%)	
Don't Know	18(14.1%)	1(0.8%)	1(0.8%)	20(15.6%)	
Total	120 (93.8%)	7(5.5%)	1(0.8%)	128 (100.0%)	

1.4 Self-insertion and removal of menstrual cup					
Pre intervention	**Post intervention**			**Total**	**p-value**
	Yes	**No**	**Don't know**		
Yes	56(43.8%)	3(2.3%)	0(0.0%)	59(46.1%)	<0.0001
No	2(1.6%)	1(0.8%)	0(0.0%)	3(2.3%)	
Don't know	60(46.9%)	4(3.1%)	2(1.6%)	66(51.6%)	
Total	118(92.2%)	8(6.3%)	2(1.6%)	128 (100.0%)	

1.5 Time duration to wear menstrual cup at one stretch						
Pre intervention	**Post intervention**				**Total**	**p-value**
	4-6 hours	**Up to 12 hours**	**Up to 24 hours**	**Don't know**		
4-6 hours	5(3.9%)	14(10.9%)	3(2.3%)	0(0.0%)	22(17.2%)	<0.0001
Up to 12 hours	1(0.8%)	26(20.3%)	0(0.0%)	0(0.0%)	27(21.1%)	
Up to24 hours	0(0.0%)	5(3.9%)	0(0.0%)	0(0.0%)	5(3.9%)	
Don't know	7(5.5%)	63(49.2%)	2(1.6%)	2(1.6%)	74(57.8%)	
Total	13(10.2%)	108(84.4%)	5(3.9%)	2(1.6%)	128(100.0%)	

1.6 Ways of proper cleaning of menstrual cup						
Pre intervention	**Post intervention**				**Total**	**p-value**
	Cleaning it by microwaving	**Cleaning it in boiling water**	**Cleaning it with soap and water**	**Don't know**		
Cleaning it by microwaving	1(0.8%)	1(0.8%)	3(2.3%)	0(0.0%)	5(3.9%)	<0.0001
Cleaning it in boiling water	1(0.8%)	10(7.8%)	18(14.1%)	3(2.3%)	32(25.0%)	
Cleaning it with soap and water	0(0.0%)	3(2.3%)	15(11.7%)	1(0.8%)	19(14.8%)	
Don't know	1(0.8%)	16(12.5%)	51(39.8%)	4(3.1%)	72(56.3%)	
Total	3(2.3%)	30(23.4%)	87(68.0%)	8(6.3%)	128(100.0%)	

1.7 Use of menstrual cup while doing heavy physical exercise/playing sports					
Pre intervention	**Post intervention**			**Total**	**p-value**
	Yes	**No**	**Don't Know**		
Yes	38(29.7%)	2(1.6%)	3(2.3%)	43(33.6%)	<0.0001
No	3(2.3%)	0(0.0%)	0(0.0%)	3(2.3%)	
Don't Know	76(59.4%)	4(3.1%)	2(1.6%)	82(64.1%)	
Total	117(91.4%)	6(4.7%)	5(3.9%)	128(100.0%)	

1.8 Side-effects					
Pre intervention	**Post intervention**			**Total**	**p-value**
	Yes	**No**	**Don't know**		
Yes	24(18.8%)	2(1.6%)	1(0.8%)	27(21.1%)	<0.0001
No	72(56.3%)	8(6.3%)	1(0.8%)	81(63.3%)	
Don't know	17(13.3%)	1(0.8%)	2(1.6%)	20(15.6%)	
Total	113(88.3%)	11(8.6%)	4(3.1%)	128 (100.0%)	

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1.9 Cost effective					
Pre intervention	Post intervention			Total	p-value
	Yes	No	Don't Know		
Yes	69(53.9%)	4(3.1%)	0(0.0%)	73(57.0%)	<0.0001
No	8(6.3%)	0(0.0%)	0(0.0%)	8 (6.3%)	
Don't Know	43(33.6%)	1(0.8%)	3(2.3%)	47(36.7%)	
Total	120(93.8%)	5(3.9%)	3(2.3%)	128(100.0%)	

Table 2: Attitude towards use of menstrual cups

2.1 Do you think menstrual cups are easy to use and acceptable					
Pre intervention	Post intervention			Total	p-value
	Yes	No	Don't know		
Yes	32(25.0%)	8(6.3%)	1(0.8%)	41(32.0%)	<0.0001
No	20(15.6%)	2(1.6%)	0 (0.0%)	22(17.2%)	
Don't know	59(46.1%)	5(3.9%)	1(0.8%)	65(50.8%)	
Total	111(86.7%)	15(11.7%)	2(1.6%)	128 (100.0%)	
2.2 Will you try menstrual cups over conventional methods					
Pre intervention	Post intervention			Total	p-value
	Yes	No	Don't Know		
Yes	49(38.3%)	2(1.6%)	0(0.0%)	51(39.8%)	<0.0001
No	35(27.3%)	0(0.0%)	0(0.0%)	35(27.3%)	
Don't Know	35(27.3%)	3(2.3%)	4(3.1%)	42(32.8%)	
Total	119(93.0%)	5(3.9%)	4(3.1%)	128(100.0%)	

2.3 Level of stigma or taboo associated with the use of menstrual cups					
Pre intervention	Post intervention			Total	p-value
	Yes	No	Don't Know		
Yes	75(58.6%)	17(13.3%)	0(0.0%)	92(71.9%)	.016
No	14(10.9%)	9(7.0%)	0(0.0%)	23(18.0%)	
Don't Know	7(5.5%)	3(2.3%)	3(2.3%)	13(10.2%)	
Total	96(75.0%)	29(22.7%)	3(2.3%)	128(100.0%)	

2.4 Do you think menstrual cup stretches out the vagina					
Pre intervention	Post intervention			Total	p-value
	Yes	No	Don't Know		
Yes	4(3.1%)	19(14.8%)	0(0.0%)	23(18.0%)	<0.0001
No	2(1.6%)	32(25.0%)	0(0.0%)	34(26.6%)	
Don't Know	4(3.1%)	65(50.8%)	2(1.6%)	71(55.5%)	
Total	10(7.8%)	116(90.6%)	2(1.6%)	128(100.0%)	

Table 3: Likert scale depicting agreement of study participants regarding preference, usage, side-effects, positive effects and willingness to use menstrual cup.

Response as per Likert scale Parameters	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Are you going to frequently prefer using menstrual cups?	61(47.7%)	50(39.0%)	10(7.8%)	5(3.9%)	2(1.6%)	128(100%)
Do you think using menstrual cups has an effect on your daily activity?	6(5.9%)	6(5.9%)	13(10.2%)	55(43.0%)	48(37.5%)	128(100%)
Do you think using menstrual cups is associated with side effects?	3(2.3%)	8(6.3%)	19(14.8%)	46(35.9%)	52(40.6%)	128(100%)
Do you think using menstrual cups has positive effect on environment?	58(45.3%)	60(46.9%)	7(9.9%)	3(2.3%)	0(0.0%)	128(100%)
Will your family members be willing to use menstrual cups if they were told about it?	45(35.2%)	56(43.8%)	21(16.4%)	5(3.9%)	1(0.8%)	128(100%)

Discussion

In the present study, there were total of 128 students out of which 72 were from 1st prof, 26 from 2nd prof and 4 & 26 from 3rd and 4th prof respectively. In another study, 400 undergraduate medical students belonging to second, third and final year MBBS of Raja Rajeswari Medical College and Hospital were included in the study population Out of 400 medical students who took part in the study, 28 (7%) of them discontinued with the questionnaire stating that they were not aware of what a menstrual cup was, Rest 372 (93%) students completed the questionnaire[3]

In the present study 96.1% of students belonged to age group 18-25 years while in another study, majority of the responders were aged between 18 and 25 (38.15%), followed by 26–35 years (34.76%). Majority of the responders belongs to urban area (41.23%) The source of information about the menstrual cup for the responders was friends (68.92%), followed by family (23.07%), media (4.30%), and medical personal (3.69%)[4]

In the present study most of the female medical students had heard about menstrual cups (96.1%) prior. In another study, Among the study population, 246 (82%) heard about menstrual cup and 54 (18%) did not heard about menstrual cup[5], In another study, 88.09% of subjects had poor knowledge, 11.9% of them had average knowledge and none of them acquired good knowledge regarding menstrual cup and only 40% of the women were aware of the usage of menstrual cup[6].In this study total of 120 participants were included. Among them, 80% of the study participants were aware of the menstrual cup[7]

In the present study, the knowledge about menstrual cups being easy to use and acceptable had also increased from 32% pre-intervention to 86.7% post-intervention, showing a significant improvement in knowledge ($p<0.05$). In our study, Knowledge about Whether the use of menstrual cups is cost effective was 57% pre-intervention which increased to 93.8% post intervention. In another study, the participants found using the menstrual cup easy and convenient. The participants described economic and environmental advantages of using the menstrual cup. Buying sanitary pads used to be an economic burden to the participants[8]

The results had shown that only 21.1% of female medical students had knowledge about side-effects of menstrual cups in the pre-test questionnaire which was increased to 88.3% in the post-test questionnaire, showing a statistically significant improvement in knowledge ($p<0.05$). In few other studies, coming to menstrual cup usage and toxic shock syndrome (TSS), 144 (38.70%) of them were of the belief that there

could be risk of getting infected with the cup usage. While 162 (43.5%) of them found no association[3]

Discomforts mentioned by the participants were: pain when inserting the menstrual cup, feeling the menstrual cup sticking out of the vagina, feeling a constant urge to urinate and leakage. Concerns were related to the size, shape and texture of the menstrual cup, and that it may "get stuck" in the vagina, while relatives were said to be concerned about the use of the menstrual cup leading to reduced fertility or losing virginity.[8] The majority (67%) of females mentioned that after usage of menstrual cups they experienced no side effects, 10% of participants had irritation and leakage, and 13% of participants had an unpleasant odor.[9]

In another study, Satisfaction was significantly higher [t(168.99) = 3.724, P = 0.001] in women who did not have pain during removal [t(168.99) = 3.724, P = 0.001], subjective vaginal pain [t(513) = 2.845, P = 0.005], pelvic pain [t(86.931)= 2.942, P = 0.004)], and allergies and rashes [t(32.693)= 2.256, P = 0.031][10]

In the present study, Knowledge about Level of stigma or taboo associated with the use of menstrual cups increased from 71.9% to 75%. In other study, Restrictions during menstruation are common. The most frequent were restrictions in visiting places of worship, and touching religious items or praying (PP 77%, 71% to 83%, range 7–100, I2 99%, n=67), with no difference by setting (table 4) or over time (figure 4)[11]

In the present study, 58 students (45.3%) Strongly agree and 60 students (46.9%) agree that using menstrual cups has positive effect on environment. In one other study, 93% think that menstrual cups are more environment friendly than sanitary pads[12]

Conclusion

It is quite significant in our educational interventional study that knowledge and awareness about menstrual cups in the medical students have improved significantly. Our study demonstrates that menstruation cups are a better option to existing menstrual hygiene practices since they are long-lasting, eco-friendly, pleasant, safe, do not require frequent changes throughout the day, and have no disposal difficulties. Adaptability develops gradually with good counselling, peer support, practice, and consistency.

Strength and Limitations

Major strength of our study was the educational interventional approach. We tried to compare the knowledge of study participants before and after the intervention which made the participants to take part in our study more actively and enthusiastically. The limitations of our study were that more participants must be added so that results of the study can be generalised. The study may have been subjected to selection bias as participation was voluntary. Lastly, the short duration of the study limited the assessment of long-term changes in knowledge and practices.

Recommendations

As the future health professionals of our country, they can help in spreading awareness about the safe and hygienic menstrual practices by using other new methods rather than traditional ones. They can also help in reducing stigma about discussing the issues related with menstruation. More such studies, on a large scale, must be conducted so this issue of safe menstrual hygiene practices can be addressed in a better manner. Governmental, Non-governmental, Private and Community participation is needed to resolve the issues related with Menstrual hygiene and safety.

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Ethical clearance: Signed copy of Declaration of Helsinki was submitted by all authors.

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