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Original Research Article

A Cross-Sectional Assessment of Knowledge, Attitude and Practice Regarding Menstrual Cup

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Abstract:

Background: Menstrual cups are device for controlling menstrual flow and have been seen as safe, effective and environmentally friendly option in comparison to conventional sanitary pads. It is a nonabsorbent reusable cup that collects menstrual blood. Although menstrual cups have been around for a while, their use is restricted by their heavy construction and tedious methodology of insertion. Nevertheless, there have been documented advantages, including enhancements in the management of health and hygiene during the menstrual period. Additionally, it has provided us with improved insights into the typical volume of menstrual fluid discharged by women during their periods. Furthermore, this research has contributed to a broader understanding, addressing gaps in our knowledge regarding the suitability and effectiveness of menstrual cups as a superior choice compared to traditional options.

Objective: This study aims at assessing the knowledge, attitude and practice among adolescent girls about menstrual cup.

Methodology: In April 2023, a cross-sectional study took place at Banas Medical College & Research Institute in Gujarat, India, involving 256 female medical students who willingly took part out of a pool of around 331. The study used a self-administered questionnaire to evaluate these students' knowledge, attitudes, and behaviours regarding menstrual cups. Data collection was carried out during their academic sessions, allowing participants approximately 15-20 minutes to complete the questionnaire. The research received ethical approval, and all participants provided informed verbal consent. This study's objective was to collect insights into the use of menstrual cups among female medical students.

Results: Involving 256 female medical students, 85.94% were familiar with menstrual cups, primarily through social media (37.27%). Surprisingly, 54.54% didn't know the cup's material. 50% recognized "Collection" as its mechanism, and 32.7% knew the insertion methods. Only 27.27% emptied the cup every 5-6 hours, with 80% uncertain. Sterilisation preferences included boiling (30.47%), while 64.06% were unsure. Positive aspects included rash-free (37.27%) and itch-free (32.27%) periods. Negative effects were pain (9.09%), urinary problems (11.81%), and infection (18.63%). Most (78.63%) were uncertain about harmful effects. Around 16.79% considered changing their menstrual protection method. Concerns among those hesitant included discomfort (37.11%), limited knowledge (27.73%), leakage (14.84%), and allergies (6.25%).Notably, 90.23% preferred sanitary pads, while only 5.86% favoured menstrual cups, and 1.17% leaned towards sanitary tampons. Out of 256 female participants, 10 currently use menstrual cups. Among these users, 80% find them easy to insert and remove, and 60% find them easy to clean. However, 80% experience leakage issues, while 80% feel comfortable using menstrual cups. Regarding adverse events, 20% report pain, 10% discomfort or irritation. Encouragingly, 70% of users express a desire to continue using menstrual cups.

Conclusion: The research underscores the need for education among medical students about menstrual cup materials and functioning, while highlighting potential benefits. It also calls for product design improvements and safety information dissemination. Future studies should explore reasons behind discomfort and limited knowledge. Overall, this research emphasises the importance of education, product enhancement, and support in promoting menstrual cup adoption among medical students.

Keywords: Menstrual hygiene management, menstrual cup, knowledge, attitude , practice

Introduction

Menstruation, an essential physiological process that commences during the pubertal phase of a woman's reproductive life, serves as a biological foundation for our society. However, despite its significance, menstrual management remains a subject of social embarrassment. Common

euphemisms such as "time of the month," "period," or "on the rag" are still widely employed, while advertisers hesitate to openly address menstruation, opting instead to discuss feminine hygiene and encourage women to maintain freshness. This ongoing discomfort with acknowledging the reality of menstruation is appropriately termed the "culture of concealment" by Karen Houppert.[1]

Menstrual protection methods and the taboos surrounding menstruation have undergone various changes over the decades. It is essential to select appropriate methods for menstrual hygiene considering these factors. Traditionally, cloth has been used to absorb menstrual flow due to its affordability and lower environmental impact. However, pads have gradually replaced cloth, especially in urban areas. Before commercially made disposable pads became available, women relied on homemade cloth pieces known as "Granny Rags." These rags were created from old sheets, pillowcases, or surplus fabric, folded, and pinned onto underwear. They were washed, dried, and reused after each use. Despite the availability of alternative options, insertable menstrual products like menstrual cups and tampons are still rarely used, often due to concerns about virginity, even though the connection between virginity and the breaking of the hymen has been invalidated.[2][3]

Menstrual cups provide a sustainable alternative to traditional tampons by collecting menstrual flow instead of absorbing it. Typically crafted from medical-grade silicone, these cups are worn internally and come in two primary designs: the vaginal cup, which is inserted into the vagina, and the cervical cup, positioned around the cervix, similar to a contraceptive diaphragm. They can hold between 10 to 38 ml of blood and require emptying every 4 to 12 hours, depending on the individual's flow and cup type. The use of non-toxic, hypoallergenic silicone minimizes the risk of issues like infections, allergies, rashes, or irritation. Moreover, as reusable products, menstrual cups can serve a woman's menstrual needs for an extended period with proper maintenance.[1][2][3][4][5][6]

The anatomical design of the menstrual cup ensures that it stays in place correctly. It is positioned below the anterior and posterior vaginal fornices when inserted, creating a significant space between the cup's circumference and the cervical opening. This design maintains proper positioning and effectiveness. Menstrual cups can be sterilized or autoclaved prior to use, making them an extremely hygienic and safe option for menstrual protection.[4]

As a result, several studies have concentrated on the advantages of menstrual cups compared to conventional methods, with a particular emphasis on promoting their use among adolescents to improve menstrual hygiene and reproductive health.

Objectives

1. To assess knowledge regarding menstrual cups.
2. To determine attitude and practices concerning menstrual cups.

Methodology

In April 2023, Banas Medical College & Research Institute in Palanpur, Gujarat state's Banaskantha district, carried out a descriptive cross-sectional study.

This study's major objective was to find out more about how female medical students perceived and used menstrual cups. Out of a total of roughly 331 female medical students, 256 students from various academic years of the MBBS undergraduate program voluntarily participated in the study by completing a self-administered questionnaire. The other individuals either declined to participate or did not show up for the sessions where the data were collected. The research team delivered the surveys and provided clear instructions to the participants while they were in class.

Students' replies to a standardized survey intended to gather information on their knowledge, attitudes, and practices concerning menstrual cups based on personal experience. It was emphasized that participation in this research study was volunearch purposes. Each participant had around 15 minutes to complete the questionnaire. The study granted permission from the ethics committee of the institution. Informed verbal consent from all participants was taken. The principal investigator reviewed the questionnaire to ensure the quality of the collected data.

Result

Table 1: Socio-Demographic Data (N=256)

Variable	Category	Frequency	Percentage (%)
Age	16-17	4	1.56
	18-19	99	38.67
	20-21	116	45.31
	22-23	37	14.46
	1st Mbbs	68	26.56
	2nd Mbbs	60	23.44

Year of Study	3rd Mbbs	70	27.34
	4th Mbbs	58	22.66
Mother's Occupation	Housewife	208	81.25
	Healthcare Professional	7	2.73
	Teacher	35	13.67
	Others*	6	2.34
	Others* Include Fashion Designer, Police, Lab Technician, Interior Designer, Microbiologist		
Father's Occupation	Business	72	28.12
	Farmer	50	19.53
	Teacher	37	14.45
	Service	50	19.53
	Healthcare Professional	19	7.42
	Others*	28	10.94
	Others * Include Carpenter, Contractor, Army Officer, Engineer, Tax Advocate, Hairstylist, Driver		
Sexual Activity	Yes	32	12.5
	No	224	87.5

The students in Table 1 were categorized into four age groups: 16-17, 18-19, 20-21, and 22-23. The majority of the respondents belonged to the 20-21 age group (45.31%), followed by the 18-19 age group (38.67%). The youngest category, 16-17, accounted for 1.56% of the participants, while the 22-23 age groups constituted 14.46%. These findings reveal the age distribution within the medical student cohort and provide an essential basis for understanding their characteristics.

The students were further classified into four groups: 1st MBBS, 2nd MBBS, 3rd MBBS, and 4th MBBS. The highest proportion of students (27.34%) was enrolled in the 3rd MBBS year, closely followed by those in the 1st MBBS year (26.56%). Meanwhile, the 2nd MBBS and 4th MBBS years accounted for 23.44% and 22.66% of the participants, respectively. These findings help in understanding the academic progression of medical students and may have implications for educational interventions and support.

The data was collected for both mothers and father's occupation, and the occupations were categorized into several groups. The most common occupation among parents was business (28.12%), followed by farmers (19.53%) and teachers (14.45%). Healthcare professionals accounted for 7.42%, while a small proportion of parents had other occupations (10.94%).Moreover, the majority of the medical students' mothers were housewives (81.25%), while a smaller percentage were healthcare professionals (2.73%) and teachers (13.67%). Regarding sexual activity, 87.5% of the medical student participants reported no sexual activity, while 12.5% confirmed engaging in sexual activity.

Table 2: Knowledge Regarding Menstrual Cup (N=220)

Variable	Category	Frequency	Percentage (%)
Have You Heard About The Menstrual Cup?(N-256)	Yes	220	85.94
	No	36	14.06
Source Of Knowledge	Family	6	2.72
	Friends	15	6.81
	Social Media	82	37.27
	Medical Personnel	7	3.18
	Others*	68	30.90
	Don't Know	42	19.09
	Others* Include Online Shopping Sites, Books, Pharmacy Store, Podcast, Webinars, Workshop		
Place Of Availability	Online Platform	105	47.7
	Medical Stores	91	41.3
	Don't Know	90	40.09
Cost	₹50-100	5	2.27
	₹200-300	35	15.90
	₹400-600	30	13.63
	Don't Know	150	68.18
	Elastomer	6	2.72

Material Of Menstrual Cup?	Rubber	32	14.54
	Silicone	40	18.18
	Latex	22	10
	Don't Know	120	54.54
Shelf Life Of Menstrual Cup?	4-7 Days	4	1.81
	1-4 Weeks	2	0.9
	1-6 Months	12	5.45
	6 Months - 10 Years	32	14.54
	>10 Years	7	3.18
	Don't Know	163	74.09
Mechanism Of Action	Collection	118	53.63
	Absorption	7	3.18
	Don't Know	95	43.18
Insertion Methods	Yes	72	32.7
	No	148	67.27
Emptying Time	1-2 Hours	1	0.45
	5-6 Hours	60	27.27
	10-12 Hours	16	7.27
	20-24 Hours	3	1.36
	Don't Know	176	80
Sterilization Of Cup	Washing With Water	39	15.23
	Boiling	78	30.47
	Microwave	14	5.47
	Don't Know	164	64.06
Benefits	Rash Free Periods	82	37.27
	Itch Free Periods	71	32.27
	No Requirement Of Frequent Changing	72	32.72
	Economical	52	23.63
	Long Shelf Life	67	30.45
	Eco-Friendly	66	30
	Physical Activity Can Be Done Easily	62	28.18
	Don't Know	1	0.45
	None	4	1.81
Harmful Effect	Pain	20	9.09
	Urinary Problem	26	11.81
	Infection	41	18.63
	None	12	5.45
	Don't Know	173	78.63

As per Table 2, out of 256 participants, 85.94% have heard about the menstrual cup. The source of knowledge happens to be 37.27% from social media, 6.81% from friends, 3.18% from medical personnel, 2.72% from family, and 30.90% from other sources. Considering the material of the menstrual cup, 18.18% suppose it to be Silicon, 2.72% suppose it to be Elastomer, 14.54% suppose it to be Rubber, 10% suppose it to be Latex and 54.54% has no idea about its material.

The Above Table 2 indicates that 14.54% of participants had knowledge about the shelf life of the menstrual cup. From the above Table 2, 50% of respondents identified "Collection" as the mechanism of action, 2.73% of respondents identified "Absorption" as the mechanism of action,47.26% of respondents were unsure of the mechanism. Among the participants 32.7% were aware about the insertion methods.

The data reveals, only 0.45% of the participants mentioned that they empty the cup every 1-2 hours. Approximately 27.27% of the respondents reported emptying the cup every 5-6 hours. For about 7.27% of the participants, they mentioned emptying the cup every 10-12 hours. Additionally, 1.36% of the respondents stated that they empty the cup every 20-24 hours. A significant majority, approximately 80% of the respondents, were uncertain about the frequency of emptying the cup. Approximately 15.23% of the participants stated that they use "Washing with water" as a method of sterilization. Moreover, around 30.47% of the respondents reported "Boiling" as their chosen sterilization method. Additionally, 5.47% of the participants mentioned "Microwave" as a means of sterilization. The majority of respondents, roughly 64.06%, expressed uncertainty about the sterilization method.

A significant proportion of the participants, about 37.27%, expressed that they experienced the benefit of "Rash-free periods" on using menstrual cup. Additionally, approximately 32.27% of the respondents reported the advantage of "Itch-free periods". Furthermore, 32.72% of the participants mentioned "No requirement of frequent changing" as a positive aspect. About 23.63% of the respondents highlighted the benefit of the menstrual cup being "Economical". Moreover, 30.45% of the participants cited "Long shelf life" as a positive feature. Additionally, 30% of the respondents praised the menstrual cup for being "Eco-friendly".

Furthermore, 28.18% of the participants acknowledged the benefit of being able to engage in "Physical activity easily" while using the menstrual cup. A small percentage of the participants, approximately 9.09% cited "Pain" as a negative consequence. Moreover, around 11.81% of the respondents reported "Urinary problems" as a harmful effect. Additionally, 18.63% of the participants identified "Infection" as a potential adverse outcome. Only a limited number of respondents, approximately 5.45%, mentioned "None" as a harmful effect. A significant portion, roughly 78.63%, of the participants expressed uncertainty regarding the harmful effects.

Table 3: Attitude Regarding the Menstrual Cup (N-256)

Variable	Category	Frequency	Percentage (%)
Best Suitable Product	Sanitary Pad	231	90.23
	Menstrual Cup	15	5.86
	Tampons	3	1.17
	Cloth	2	0.78
	Don't know	5	1.95
Want to change the current method?	Yes	43	16.79
	No	213	83.20
Willing to buy a menstrual Cup?	Yes	196	76.56
	No	60	23.44
Do you think it's a safe device?	Yes	90	35.16
	No	11	4.3
	Don't know	155	60.55
How do you feel about it?	Very excited	8	3.12
	Somewhat excited but a little afraid	67	26.17
	Neutral	116	45.31
	Mostly afraid but willing to give a try	65	25.39

The above Table-3 shows the attitude among the study population about the menstrual cup. About 16.79% want to change their method while 83.20% of those don't want to opt for a menstrual cup as their sanitary protection method. 30.86% of the study population is willing to recommend it to others and 35.16% think that it is a safe device.

Further, 90.23% believe sanitary pads, 5.86% believe menstrual cups and 1.17% believes that sanitary tampons are best suited for them. Moreover, only 3.13% are very excited about menstrual cups, 26.17% are somewhat excited while 45.31% are neutral and 25.39% are mostly afraid.

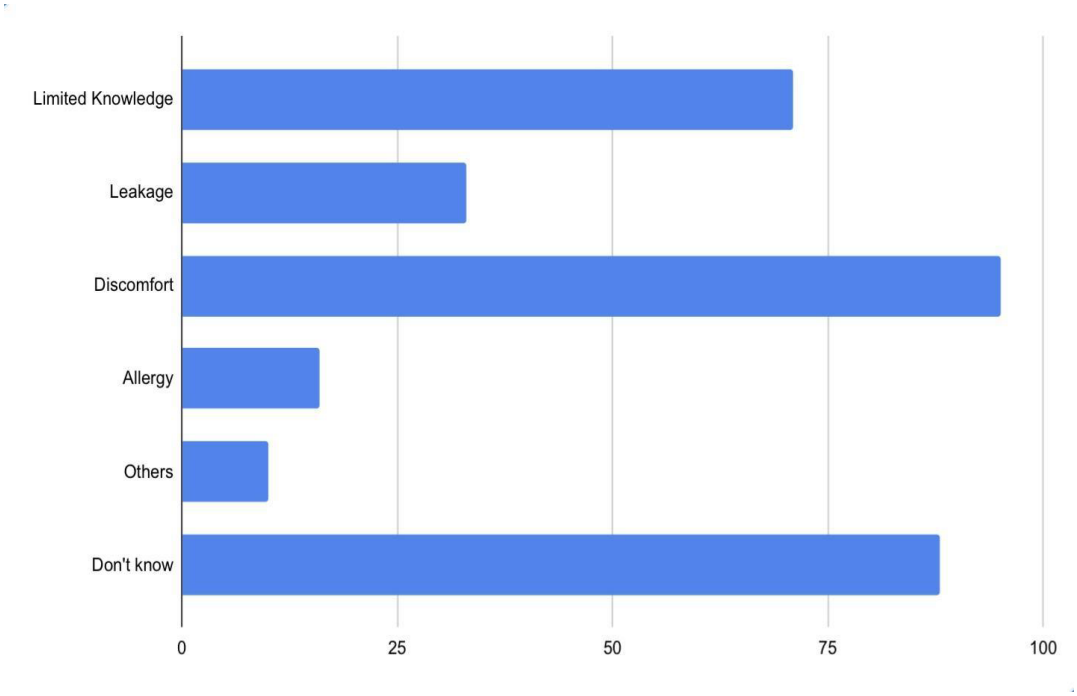

Figure 1: Concerning Factors in Usage of Menstrual Cup (N-256)

From Figure 1, among those who doesn't want to opt menstrual cup as their sanitary protection method are concerned about 37.11% Discomfort, 27.73% limited knowledge, 14.84% leakage, 6.25% Allergy and 34.37% are not sure about why they don't want to change

Table 4: Practice Regarding Menstrual Cup (N=10)

Variable	Category	Frequency	Percentage (%)
Easy removal of menstrual cup	Yes	8	80
	No	2	20
Easy cleaning of menstrual cup	Yes	8	80
	No	2	20
Leakage problems	Yes	6	60
	No	4	40
Feels comfortable	Yes	8	80
	No	2	20
Adverse event	Pain	2	20
	Discomfort/Irritation	1	10
	None	7	70
Willing to continue further?	Yes	7	70
	No	3	30

The study suggests that 10 out of 256 females are using a menstrual cup currently. 80% of the users find it both easy to wear and remove. 60% of the users find it easy to clean and 80% face leakage problems. 80% feel comfortable using it. Discussing the adverse event faced by the users; 20% suffer with pain while 10% face discomfort/ irritation. Among the users 70% are willing to continue using it further.

Discussion

This study's conclusions are consistent with other published research in other published studies. In a prior study conducted by Sweatha and Amrita among reproductive-age women in south India, it was observed that while 82% of the participants had good knowledge of the menstrual cup, just 6% had used it.[7] In the present study 85.94% of the participants have heard about menstrual cup and 3.9% have used it.

In a study conducted by Meghana et al, in a rural tertiary care hospital, among the 120 study participants 80% of them were aware of menstrual cups. Among them 36.7% of the participants got information from social media, 26.7% from family, 20.8% from friends, and 14.2% from medical personnel. In the above study, 36.7% of the participants knew that a menstrual cup is made up of silicone.

Whereas 62.5% reported that they think the menstrual cup is a safe device, whereas 18.3% said

they are not. Interestingly, 94.2% of the participants knew the exact mechanism of action of the menstrual cup and 35.8% knew that the cups should be emptied within 6-12 hours. In the above study, the main concern about the menstrual cup was found to leakage (51.7%), followed by discomfort (26.7%), limited knowledge (15%), and allergies (6.7%).[8] In the present study the main concerns about menstrual cup was found to be 37.11% Discomfort, 27.73% limited knowledge, 14.84% leakage, and 6.25% Allergy.

In a former study conducted by Aashima Kajla and Gaurav Gaur about Knowledge, Awareness and Practices on Menstrual Hygiene Management among Panjab University Chandigarh Girls' Hostel Residents, Sanitary napkin is the most widely used sanitary product used by the respondents during menstruation. It is being used by 50 respondents (84%), 8 respondents (13%) used tampons and only 2 respondents (3%) used a menstrual cup.[9]In the present study, the predominant menstrual hygiene product in use is sanitary pads, with 90.23% of respondents using them. Menstrual cups are used by 5.86% of respondents, tampons by 1.17%, and cloth by 0.78%.

A previous systematic review conducted by Van Eijk et al. has used menstrual blood leakage while using the menstrual cup and other usual products as the primary outcome. However, study findings indicated that leakage was similar or lower for menstrual cups compared with the other devices used for maintenance of menstrual hygiene in women. Four studies in the above systematic review including 507 women found no negative effects of menstrual cup use on the vaginal flora. The usage of the menstrual cup was linked to five women reporting severe pain or vaginal sores, six women reporting allergies or rashes, nine women reporting urinary tract problems (three of which included hydronephrosis), and five women reporting toxic shock syndrome. Thirteen women who utilized the menstrual cup between one week and 13 months after the intrauterine device's placement reported an intrauterine device dislodging. 47 cervical cup users and 2 vaginal cup users reported receiving professional assistance to help them remove their menstrual cups.[5] In the current study, 80% of those using menstrual cups reported experiencing issues with leakage. When discussing adverse events, 20% mentioned experiencing pain, while 10% reported discomfort and irritation.

Conclusion & Recommendations

The research findings suggest that there is a notable level of awareness among medical students regarding the menstrual cup, largely influenced by social media. However, there is a considerable shortfall in their knowledge about the material and functioning of the menstrual cup. Bright sides, such as rash-free and itch-free periods, ease, and interest in trying the menstrual cup, illuminate its potential as a menstrual hygiene product.

There is a necessity for educational efforts to enrich their knowledge about the menstrual cup's material, functioning, and safety. Workshops, seminars, and informational movements could be arranged to bridge this gap. Considering the leakage issues reported by current users, manufacturers should focus on product design improvements to make it more leak-resistant. Gathering feedback from users could be beneficial in this regard.

Research and information on the safety of menstrual cups should be widely disseminated to alleviate concerns and build confidence among potential users. Future studies could delve deeper into the reasons behind discomfort and limited knowledge among some students and explore strategies to address these issues effectively. Overall, while the research highlights both opportunities and challenges associated with the adoption of menstrual cups among medical students, it underscores the importance of education, product improvement, and support in promoting this sustainable menstrual hygiene option.

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