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## Original Research Article

# Assessment of knowledge and creating awareness for the use of menstrual cup and its related aspects during menstruation among young adults: an environment friendly approach

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## ABSTRACT

**Background:** An advancement in the field of menstrual management products is the menstrual cup that act by collecting the menstrual blood which needs to be emptied every 6 to 12 hours and can last for up to 5 to 10 years, thereby decreasing the environmental impact caused by one-time use products. Thus, this research was conducted to assess the knowledge among young adult females about the use of menstrual cup and to further spread awareness about its use as an environment friendly and cost-effective device.

**Methods:** The present study was a cross-sectional descriptive study conducted in Doon Hospital, Dehradun with 230 participants.

**Results:** 68.6% of the study participants knew about the use of menstrual cup as menstrual management device. 57.8% of the participants feel that the menstrual cup is cost effective alternative to sanitary pads and tampons and 66.5% feel that the menstrual cup is an environment friendly device. After an informative video was shown to the participants about menstrual cup, the knowledge of majority of the participants changed from “average” to “good”.

**Conclusions:** The study results show that although majority of the study population knew about the use of menstrual cup, yet they hesitate from using it. Thus, there is need to create awareness about the use of menstrual cup as an effective menstrual management product and make it more affordable and available to the public.

**Keywords:** Menstrual cup, Environment friendly, Cost effective, Menstruation

## INTRODUCTION

Menstruation is a natural and normal biological process that marks the transition from girlhood to womanhood. It is a regular part of the menstrual cycle and shows that the reproductive organs are functioning correctly.

Even though menstruation is an important phenomenon in the life of every woman, it is surrounded by various cultural taboos and stigmas. There is use of terms such as “time of the month”, “period”, or “on the rag” to describe

menstruation.<sup>1</sup> Karen Houppert has correctly described menstruation as the reality of concealment as females constantly go through discomfort during menstruation.<sup>1</sup> Acknowledging and discussing menstruation helps to normalize female physiology, reduce stigma, and promote a healthier attitude towards women's health.

Menstrual management products are used to handle menstrual flow and maintain personal hygiene during menstruation. They offer convenience, comfort, and help to prevent leakage. Proper menstrual management also

contributes to the overall well-being and allows individuals to go about their daily activities with confidence and ease.

Menstrual management products are of two types. The first category of products is the one used externally. They include sanitary pads, panty liners, and menstrual panties. Whereas the second category of products includes those that are used internally. These products are inserted into the vagina and include sanitary tampons and menstrual cups.<sup>2</sup>

Among women aged 13 to 51 years who menstruate, the average period lasts three to seven days per month which accounts for 2,280 days over a lifetime. During that time, over 10,000 sanitary pads and tampons are used.<sup>3</sup> Further, menstrual management product usage tends to be significantly greater among individuals experiencing heavy menstrual bleeding as indicated in community surveys.<sup>4</sup>

According to the State of India's Environment 2019 Survey, the Menstrual Hygiene Alliance of India (MHAI) has estimated that there are 336 million menstruating women in India, out of which 36 percent use disposable menstrual management products such as sanitary pads and sanitary tampons. This accounts for a total of 121 million women. This means that a total of 12.3 billion disposable sanitary pads and tampons are used every year and dumped in landfills. The majority of which are not biodegradable or compostable.<sup>5</sup>

Sanitary pads and tampons once used are disposed of and dumped in open landfills. These landfills can be breeding grounds for a wide variety of infection-causing micro-organisms. Sanitary pads and tampons use plastic and this plastic takes hundreds of years to degrade. Thus, causing a negative impact on the environment.<sup>5</sup>

An advancement in the field of menstrual management products is the menstrual cup. Menstrual cups are bell-shaped intravaginal devices. They act by collecting the menstrual blood which needs to be emptied every 6 to 12 hours. A single menstrual cup can be used for multiple menstrual cycles and last for up to 5 to 10 years, thereby decreasing the environmental impact caused by one-time use products. Menstrual cups are also a cost-effective alternative to one-time-use menstrual management products.

Thus, this study was conducted to assess the knowledge about the availability of various menstrual management aids aiming at the menstrual cup as an alternative, cost-effective, and environment friendly device.

### ***Aim and objectives***

The aim of this study is to assess the knowledge and create awareness about menstrual cups and their use during menstruation as a menstrual hygiene management option

and a cost-effective and environment friendly alternate to sanitary pads and tampons.

Objectives of the study were: to assess the knowledge of young adults about; availability of various menstrual management aid products such as sanitary pads, sanitary tampons, and menstrual cups; menstrual cups as an alternative aid to menstrual hygiene management; and the cost-effective and environmentally friendly aspects of menstrual cup usage as compared to one-time-use products such as sanitary pads and sanitary tampons.

### ***Secondary objectives***

The information gathered from this study can be used by policymakers to incorporate this environmentally friendly alternative and make it more affordable and available at healthcare centres.

## **METHODS**

### ***Study design and site***

After taking ethical approval with number-GDMC/IEC/2023/88 from the IEC of college for this study, a cross-sectional study was conducted at Doon Hospital, Dehradun. The hospital is affiliated to Government Doon Medical College, Dehradun (Uttarakhand). It is a tertiary care teaching hospital catering healthcare needs of urban as well as rural areas in the vicinity.

### ***Study period***

The duration of the study was from December 2023 to January 2024.

### ***Sample size***

The sample size was calculated by using Statulator software by taking a proportion 82% from a study. The sample size was 227 at 95% confidence level and 5% precision.

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

The sample size was rounded off to 230.

### ***Inclusion criteria***

Menstruating females who are willing to be a part of this study, educated at least up to high school and having smartphones were included.

### ***Exclusion criteria***

Females who are pregnant or planning to conceive and females with known congenital anomaly of genital tract were excluded.

**Informed consent procedure**

Subjects taking part in the study were explained the purpose of the study and their consent for participation was taken before the commencement of the study.

**Sample collection**

A self-structured and pre-validated questionnaire was prepared. Data was collected through the questionnaire in

online format. To create awareness among the population, an informative video was shown to the respondents.

**Processing**

After data collection, the collected data was entered in Microsoft Excel Office-2019.

**Questionnaire**

The questionnaire is mentioned in Table 1.

**Table 1: Questionnaire.**

| S. no. | Variables  |                                  |                                 |                                 |
|--------|--|----------------------------------|---------------------------------|---------------------------------|
| 1      | Age  |                                  |                                 |                                 |
| 2      | Residence:   |                                  |                                 |                                 |
|        | a. Urban   | b. Rural                         |                                 |                                 |
| 3      | Education:   |                                  |                                 |                                 |
|        | a. Up to high school   | b. Not up to high school         |                                 |                                 |
| 4      | Do you menstruate?   |                                  |                                 |                                 |
|        | a. Yes   | b. No                            |                                 |                                 |
| 5      | Are you married?   |                                  |                                 |                                 |
|        | a. Yes   | b. No                            |                                 |                                 |
| 6      | If you are married, are you pregnant or planning to conceive?  |                                  |                                 |                                 |
|        | a. Yes   | b. No                            |                                 |                                 |
| 7      | Do you have any known congenital disease of the genital tract?   |                                  |                                 |                                 |
|        | a. Yes   | b. No                            |                                 |                                 |
| 8      | How would you describe your menstrual flow?  |                                  |                                 |                                 |
|        | a. Light flow  | b. Medium flow                   | c. Heavy flow                   | d. Very heavy flow              |
| 9      | What is the duration of your normal menstruation?  |                                  |                                 |                                 |
|        | a. 1-2 days  | b. 3-5 days                      | c. 5-7 days                     | d. More than 7 days             |
| 10     | How many of the following menstrual management aids are you aware of?                                    |                                  |                                 |                                 |
|        | a. Cloth   | b. Sanitary pads                 | c. Sanitary tampons             | d. Menstrual cup                |
| 11     | How would you grade your knowledge about menstrual cup?  |                                  |                                 |                                 |
|        | a. Poor  | b. Average                       | c. Good                         | d. Very good                    |
| 12     | Have you used a menstrual cup before?  |                                  |                                 |                                 |
|        | a. Yes   | b. No                            |                                 |                                 |
| 13     | Do you think the menstrual cup is a safe device?   |                                  |                                 |                                 |
|        | a. Yes   | b. No                            | c. Maybe                        | d. Don't know                   |
| 14     | Can the menstrual cup be used (mark if yes):   |                                  |                                 |                                 |
|        | a. By virgins  | b. After normal vaginal delivery | c. While swimming and bathing   | d. As a method of contraception |
| 15     | Is the use of sanitary pads necessary with a menstrual cup?  |                                  |                                 |                                 |
|        | a. Yes   | b. No                            | c. Maybe                        | d. Don't know                   |
| 16     | How does the menstrual cup work?   |                                  |                                 |                                 |
|        | a. By collecting menstrual blood   | b. By absorbing menstrual blood  | c. By preventing menstrual flow | d. All of these                 |
| 17     | How much do you spend (per month) on menstrual management aid products?                                  |                                  |                                 |                                 |
|        | a. 100-200 rupees  | b. 200-300 rupees                | c. More than 300 rupees         | d. Don't know                   |
| 18     | How frequently should a menstrual cup be emptied?  |                                  |                                 |                                 |
|        | a. Every 3-4 hours   | b. Every 6-12 hours              | c. Once a day                   | d. Don't know                   |
| 19     | How long can the same menstrual cup be used?   |                                  |                                 |                                 |
|        | a. For 1 month only  | b. For 1-2 years                 | c. For 5-7 years                | d. Don't know                   |
| 20     | Do you think the use of menstrual cup will be a cost-effective alternative to sanitary pads and tampons? |                                  |                                 |                                 |
|        | a. Yes   | b. No                            | c. Maybe                        | d. Don't know                   |

Continued.

| S. no. | Variables   |
|--------|---|
| 21     | How are sanitary pads and tampons disposed after use?   |
|        | a. Dumped in landfills b. Degraded  |
| 22     | Do you think the disposal of sanitary pads and tampons is environment friendly?                           |
|        | a. Yes b. No c. Maybe d. Don't know   |
| 23     | Do you think the menstrual cup is an environment friendly alternative to sanitary pads and tampons?       |
|        | a. Yes b. No c. Maybe d. Don't know   |
| 24     | With which material is the menstrual cup made up of?  |
|        | a. Silicone b. Rubber c. Latex d. Don't know  |
| 25     | How should the menstrual cup be cleaned after use?  |
|        | a. Washing under water only b. Washing with soap and water c. Boiling in water d. All of these            |
| 26     | What is your chief concern related to the menstrual cup?  |
|        | a. Discomfort b. Allergies c. Leakage d. Don't know   |
| 27     | What are your views on the hygienic aspect of menstrual cup?  |
|        | a. More hygienic than sanitary pads b. Less hygienic than sanitary pads c. Equally hygienic d. Don't know |
| 28     | After watching the video, how would you grade your knowledge about the menstrual cup?                     |
|        | a. Poor b. Average c. Good d. Very good   |
| 29     | If a menstrual cup is made available, are you willing to use it?  |
|        | a. Yes b. No  |
| 30     | Will you recommend others to use a menstrual cup?   |
|        | a. Yes b. No c. Maybe d. Don't know   |

Questionnaire was developed based on questions taken from published research articles.<sup>5,8,11</sup> The questionnaire was pre-validated before the commencement of the study.

## RESULTS

The study was conducted on participants drawn from Doon Hospital, Dehradun. A total of 246 participants responded out of which 230 met the inclusion criteria of the study. The distribution of the sample was done based on demographic details such as age, residence, marital status, menstrual flow, and duration of menstruation.

### *Basic characteristics of the participants*

The age of the respondents varies from 19 years to 29 years (Table 2). The majority of the study population, that is 47.8% (110) lies in the age group of 19 years to 21 years.

86.1% (198) of the respondents were unmarried. 135 (58.7%) participants had their menstruation for a duration of 3 to 5 days (Table 2).

Out of the total 230 respondents, 30 (13%) had light menstrual flow, 145 (63%) had medium flow, 43 (18.7%) had heavy flow, and 12 (5.3%) had very heavy flow (Figure 1).

### *Knowledge about availability of various menstrual management aids*

Out of the total 230 participants, 66.9% (154) of respondents were aware of using tampons as a menstrual

management product and 68.6% (158) females were aware of menstrual cups.

**Table 2: Basic demographic details and knowledge about various menstrual management products.**

| Variables   | No. of respondents | No. of respondents in percentage (%) |
|---|--------------------|--------------------------------------|
| <b>Age (in years)</b>   |                    |                                      |
| 19-21   | 110                | 47.8                                 |
| 22-24   | 83                 | 36.1                                 |
| 25-27   | 26                 | 11.3                                 |
| 28-29   | 11                 | 4.8                                  |
| <b>Residence</b>  |                    |                                      |
| Urban   | 197                | 85.7                                 |
| Rural   | 33                 | 14.3                                 |
| <b>Marital status</b>   |                    |                                      |
| Married   | 32                 | 13.9                                 |
| Unmarried   | 198                | 86.1                                 |
| <b>Duration of menstruation in days</b>   |                    |                                      |
| 1 to 2  | 17                 | 7.4                                  |
| 3 to 5  | 135                | 58.7                                 |
| 5 to 7  | 68                 | 29.6                                 |
| More than 7   | 10                 | 4.3                                  |
| <b>How many of the following menstrual management products are you aware of</b> |                    |                                      |
| Cloth   | 145                | 63                                   |
| Sanitary pads   | 225                | 97.8                                 |
| Sanitary tampons  | 154                | 66.9                                 |
| Menstrual cup   | 158                | 68.6                                 |

Figure 2 shows the respondents' opinion on how the used sanitary pads are disposed-off. 67% (154) said that the used pads are dumped in landfills, while 33% (76) believe sanitary pads are degraded. 66.1% (152) do not feel that the disposal is environmentally friendly (Table 3 and Figures 2 and 3).

### **Knowledge about the menstrual cup as an alternative aid to menstrual hygiene management**

Table 3 shows that out of the 230 respondents, only 31 (13.5%) have used the menstrual cup before.

The table represents how the respondents grade their knowledge about the menstrual cup. Only 9.1% (21) had very good knowledge of the menstrual cup.

**Table 3: Knowledge about menstrual cup.**

| Variables   | No. of respondents | No. of respondents in percentage (%) |
|---|--------------------|--------------------------------------|
| <b>Have you used the menstrual cup before</b>                   |                    |                                      |
| Yes   | 31                 | 13.5                                 |
| No  | 199                | 86.5                                 |
| <b>How would you grade your knowledge about menstrual cup</b>   |                    |                                      |
| Poor  | 36                 | 15.7                                 |
| Average   | 107                | 46.5                                 |
| Good  | 66                 | 28.7                                 |
| Very good   | 21                 | 9.1                                  |
| <b>Do you think the menstrual cup is a safe device</b>          |                    |                                      |
| Yes   | 110                | 47.8                                 |
| No  | 12                 | 5.2                                  |
| Maybe   | 70                 | 30.4                                 |
| Don't know  | 38                 | 16.5                                 |
| <b>Mechanism of action of menstrual cup</b>                     |                    |                                      |
| By collecting blood   | 170                | 73.9                                 |
| By absorbing blood  | 14                 | 6.1                                  |
| By preventing flow  | 12                 | 5.2                                  |
| All of these  | 34                 | 14.8                                 |
| <b>Is the use of sanitary pads necessary with menstrual cup</b> |                    |                                      |
| Yes   | 18                 | 7.8                                  |
| No  | 143                | 62.2                                 |
| Maybe   | 35                 | 15.2                                 |
| Don't know  | 34                 | 14.8                                 |

47.8% (110) of the respondents think that the menstrual cup is a safe device for the management of menstrual flow. Out of the 230 respondents, 170 (73.9%) knew about the correct mechanism of action of the cup, that is by collecting blood. When asked whether the use of sanitary

pads is necessary with the menstrual cup, only 7.8% (18) of the respondents said yes.

75.2% (173) of respondents said that the menstrual cup can be used by virgins. Only 54.3% (125) respondents believed that the cup can be used after normal vaginal delivery. 62.2% (143) said that it can be used while swimming and bathing. 15.7% (36) believe that the menstrual cup can be used as a method of contraception (Figure 4).

38.2% (88) of the respondents believe that the menstrual cup is more hygienic than sanitary pads (Table 4).

**Table 4: Knowledge about menstrual cup.**

| Variables  | No. of respondents | No. of respondents in percentage (%) |
|--|--------------------|--------------------------------------|
| <b>What are your views on the hygienic aspect of menstrual cup</b> |                    |                                      |
| More hygienic  | 88                 | 38.2                                 |
| Less hygienic  | 36                 | 15.7                                 |
| Equally hygienic   | 37                 | 16.1                                 |
| Don't know   | 69                 | 30.0                                 |
| <b>How to clean the menstrual cup after use</b>                    |                    |                                      |
| Washing under water only   | 24                 | 10.4                                 |
| Washing with soap and water  | 27                 | 11.7                                 |
| Boiling in water   | 94                 | 40.9                                 |
| All of these   | 85                 | 37                                   |
| <b>Frequency of emptying the menstrual cup</b>                     |                    |                                      |
| Every 3-4 hours  | 83                 | 36.1                                 |
| Every 6-12 hours   | 84                 | 36.5                                 |
| Once a day   | 8                  | 3.5                                  |
| Don't know   | 55                 | 23.9                                 |
| <b>How long can the same menstrual cup be used</b>                 |                    |                                      |
| For 1 month only   | 19                 | 8.2                                  |
| For 1-2 years  | 57                 | 24.8                                 |
| For 5-10 years   | 57                 | 24.8                                 |
| Don't know   | 97                 | 42.2                                 |
| <b>What are your chief concerns related to the menstrual cup</b>   |                    |                                      |
| Discomfort   | 89                 | 38.7                                 |
| Allergies  | 33                 | 14.3                                 |
| Leakage  | 37                 | 16.1                                 |
| Don't know   | 71                 | 30.9                                 |

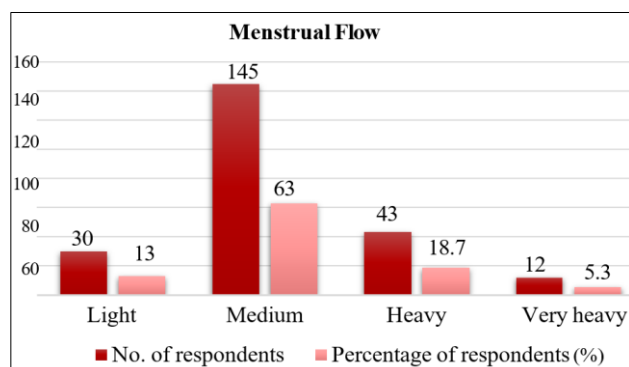
10.4% (24) of the respondents would only wash the cup under water, while 11.7% (27) would wash with soap and water. 40.9% (94) would wash the cup in boiling water. Only 37% (85) of the respondents would clean the menstrual cup using all three methods.

36.5% (84) think the cup should be emptied every 6-12 hours. 24.8% (57) of the respondents believe that the menstrual cup can be used for 5-7 years.

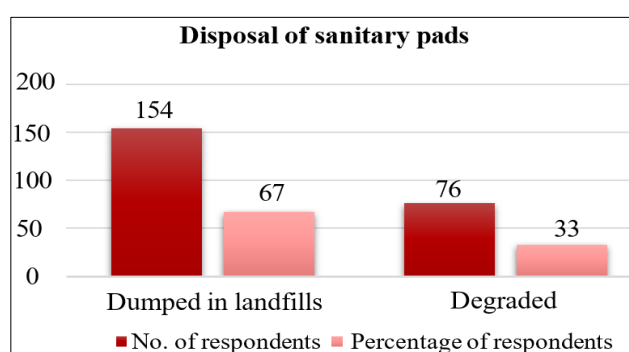


The chief concern that most of the respondents reported is that the menstrual cup may cause discomfort, 38.7% (89). While 14.3% (33) believed that menstrual cup may cause allergies. However, 16.1% (37) of the respondents thought that the menstrual cup may cause leakage.

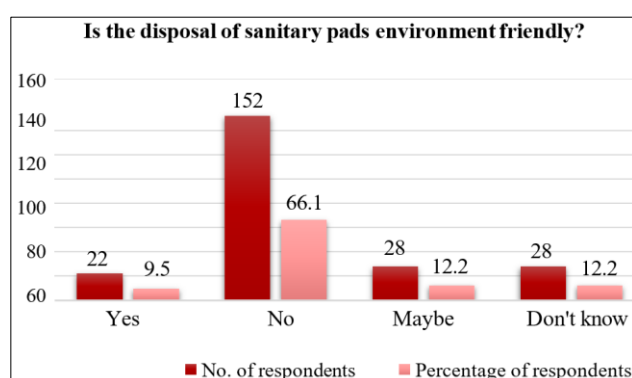
Only 9.6% (22) chose latex, while 28.7% (66) didn't know the material with which the menstrual cup is made up of.



**Figure 1: Menstrual flow of the study participants.**



**Figure 2: How is the sanitary pad disposed after use?**



**Figure 3: Is the disposal of sanitary pad environment friendly?**

#### **Knowledge about menstrual cup as a cost-effective and environment-friendly device**

49.6% (114) of the respondents spend 100-200 rupees per month on menstrual management products. 27% (62)

spend 200-300 rupees per month, while 14.3% (33) spend more than 300 rupees monthly. 9.1% (21) of the respondents were not aware of the money they spend on menstrual management products.

57.8% (133) of the respondents believe that the menstrual cup will be a cost-effective alternative to sanitary pads and sanitary tampons.

66.5% (153) believe that menstrual cup is an environment friendly (Figure 5).

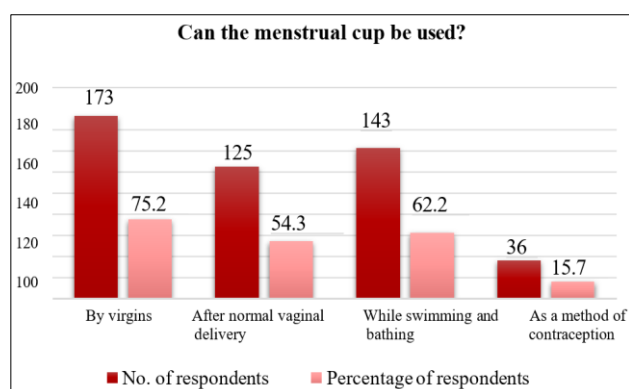
#### **Awareness about menstrual cup**

An informative video was shown to all the respondents of the study. They were then asked to grade their knowledge about the menstrual cup. After watching the informative video, 77% (177) of the respondents were willing to use the menstrual cup as an alternative to other menstrual management products.

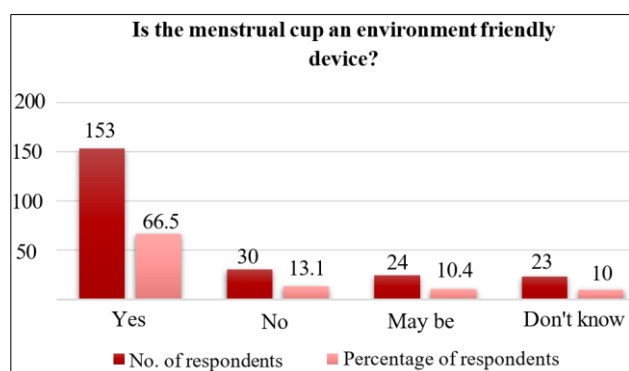
56.1% (129) of the respondents would recommend others to use the menstrual cup. Only 8 respondents (3.4%) said no (Table 5).

**Table 5: Menstrual cup as a cost-effective device.**

| Variables   | No. of respondents | No. of respondents in percentage (%) |
|---|--------------------|--------------------------------------|
| <b>Money spent on menstrual management products per month (in rupees)</b> |                    |                                      |
| 100-200   | 114                | 49.6                                 |
| 200-300   | 62                 | 27                                   |
| More than 300   | 33                 | 14.3                                 |
| Don't know  | 21                 | 9.1                                  |
| <b>Is the menstrual cup a cost-effective alternative to sanitary pads</b> |                    |                                      |
| Yes   | 133                | 57.8                                 |
| No  | 8                  | 3.5                                  |
| Maybe   | 49                 | 21.3                                 |
| Don't know  | 40                 | 17.4                                 |
| <b>Are you willing to use a menstrual cup</b>                             |                    |                                      |
| Yes   | 177                | 77                                   |
| No  | 53                 | 23                                   |
| <b>Will you recommend others to use the menstrual cup</b>                 |                    |                                      |
| Yes   | 129                | 56.1                                 |
| No  | 8                  | 3.4                                  |
| Maybe   | 82                 | 35.7                                 |
| Don't know  | 11                 | 4.8                                  |
| <b>Knowledge about menstrual cup after watching informative video</b>     |                    |                                      |
| Poor  | 2                  | 0.8                                  |
| Average   | 49                 | 21.3                                 |
| Good  | 137                | 59.6                                 |
| Very good   | 42                 | 18.3                                 |



**Figure 4: When can the menstrual cup be used?**



**Figure 5: Is the menstrual cup an environment friendly device?**

## DISCUSSION

In this study, 230 participants, in the age group of 19 years to 29 years were included. The mean age of the participants was 22.3 years.

It is seen that 68.6% of the participants were aware about the use of menstrual cup which is similar to the findings of Shwetha et al in their study on menstrual cup where 82% of the participants knew about menstrual cup.<sup>9</sup> Similar findings were noted by Meghna et al in their study where among the 120 participants, 80% were aware of the use of menstrual cup.<sup>8</sup>

However, in contrast to this study, 93.4% of the participants were aware about the menstrual cup in a study conducted by Devan et al on 350 females of reproductive age group.<sup>[11]</sup> Similar findings were reported by Manorama et al where only 7% of the 400 undergraduate female students were unaware of the use of menstrual cup.<sup>5</sup>

Out of the 230 participants in this study, 13.5% of them had used the menstrual cup before. This is similar to the findings of Devan et al, where out of 350 participants, 15.1% have tried using the menstrual cup.<sup>11</sup> In contrast, only 2.67% of the 300 participants have used the menstrual cup in Shwetha et al study of menstrual cup.<sup>9</sup> As reported by Manorama et al, out of the 372 participants, none have

used the menstrual cup.<sup>5</sup> Similar findings were reported by Meghana et al. They also reported that 96.7% of their study participants still use sanitary pads as a method to manage menstrual flow.<sup>8</sup>

According to Meghana et al, 48.3% of their study participants have average knowledge about the menstrual cup.<sup>8</sup> Similarly, Devan et al also reported that 51.7% of their study participants had average knowledge.<sup>11</sup> This is comparable to the findings of this study where 46.5% of the study participants have average knowledge of the menstrual cup. 28.7% of the participants of this study have good knowledge. In contrast to this, only 5.8% of the participants had good knowledge according to the study conducted by Meghana et al.<sup>8</sup> These findings reveal that even though more than 50% of the study participants of this study were aware about the menstrual cup, yet they do not have adequate knowledge about the cup.

In this study, 47.8% of the study participants think that the menstrual cup is a safe device similar to the findings of Meghana et al where 62.5% of participants had the same opinion.<sup>8</sup> In contrast to this, 92.47% of the 344 participants in the study conducted by Manorama et al said that the menstrual cup is a safe device and 84% of the participants of the study of Devan et al have the same opinion.<sup>5,11</sup>

Out of the 230 participants, 73.9% were aware about the correct mechanism of action of the menstrual cup, that is through collection of menstrual fluid. Whereas, according to Manorama et al, 99% of their study participants knew the correct mechanism of action and 94.2% of the study participants of Meghana et al study knew the exact mechanism.<sup>5,8</sup>

In this study, 75.2% of the participants said that virgins can use the menstrual cup similar to the findings of the study conducted by Manorama et al where 84.13% of the participants had the same opinion.<sup>5</sup> In this study, 54.3% of the participants said yes for the use of menstrual cup after normal vaginal delivery similar to the findings of Manorama et al where 60.2% had the same opinion.<sup>5</sup> They also reported that 81.7% of the participants knew about the use of menstrual cup while swimming and bathing, whereas in this study only 62.2% knew about this.<sup>5</sup> Regarding the use of menstrual cup as a contraceptive device, 15.7% of the participants of this study had wrong notion about this. However, according to Manorama et al, only 5.3% of their study participants had this opinion.<sup>5</sup>

In this study, 10.4% and 11.7% of the study participants each said that the menstrual cup should be cleaned with water only and with soap and water respectively. In contrast to this, 53.3% of the participants of the study of Meghana et al said that the menstrual cup should be washed with water only.<sup>8</sup> According to the study of Manorama et al, 28.4% of their study participants feel that the menstrual cup should be boiled for cleaning.<sup>5</sup> In contrast to this, 40.9% of the participants of this study had the same opinion.

In this study, 36.5% of the participants knew correctly that the cup should be emptied every 6 to 12 hours, similar to the findings of Meghana et al where 35.8% of the participants had the same view.<sup>8</sup> In contrast to this, according to the study of Manorama et al, 51.8% of the participants had no idea regarding this, while in this study, only 23.9% of the participants didn't know the time of emptying of the menstrual cup.<sup>5</sup>

In this study, the chief concern about the menstrual cup is discomfort for 38.7%, followed by leakage for 16.1% and allergies for 14.3%. In contrast to this, out of the 120 participants in the study of Meghana et al, discomfort was the chief concern for 26.7%, leakage for 51.7% and allergies for only 6.7%.<sup>8</sup> However, majority of the participants didn't know what their chief concern was as they had never used the menstrual cup before.

In this study, 49.1% of the participants knew correctly that the menstrual cup is made from silicone. Whereas, according to the study conducted by Meghana et al, 36.7% of the participants knew that it is made up of silicone.<sup>8</sup>

In this study 57.8% of the participants find the menstrual cup as a cost-effective device as compared to sanitary pads and tampons. However, according to the study of Devan et al, among the 275 participants, 78.6% find it cost effective.<sup>11</sup>

According to the study conducted by Shwetha et al, more than 50% of participants believe that the menstrual cup is more beneficial than sanitary pads and tampons.<sup>9</sup> Similarly, in this study, 66.5% of the participants have the opinion that the menstrual cup is an environment friendly device. This can be compared to the fact that 57% of the study participants knew that the same cup can be used for 5 to 10 years.

The study participants were shown an informative video about the menstrual cup and were again asked to grade their knowledge about it. 59.6% said they have good knowledge as compared to only 28.7% before watching the video. After watching the informative video about the menstrual cup, 77% of the participants were willing to use it and 56.1% would recommend others to use it. This is similar to the findings of the study conducted by Meghana et al, where 65% of the participants were willing to use the device and 45% would recommend it to others.<sup>8</sup> However, the findings of study conducted by Devan et al reveal that only 49.1% of the participants are willing to use the cup.<sup>11</sup>

Thus, it can be concluded that knowledge about the menstrual cup as an environment friendly and cost-effective menstrual management device is one of the major obstacles towards its acceptance among the menstruating population. The policy makers should initiate promotional activities and awareness programs to educate the population about the menstrual cup. Further, menstrual cups should be made more affordable and available to the

public and reduce the carbon foot-print of one-time use menstrual products.

### Limitations

The main limitation of the present study is its small sample size, which may affect the generalizability of the study. Further research could benefit from using a larger and more diverse sample.

### CONCLUSION

This study concluded that majority of the young adult female population has average knowledge about the use of menstrual cup. A large number of the study participants acknowledged the environment friendly aspect of menstrual cup. However, there is still scope for educating the masses about this sustainable advancement in the field of menstrual management products. For this, the younger population should be targeted as they are more open to the idea of environment-friendliness. There is still confusion among the masses regarding the pocket-friendly aspect of menstrual cup. Therefore, the use of menstrual cup as a cost-effective device should be advertised, especially in the rural areas and areas of high poverty. The menstruating population should be educated that the menstrual cup is made up of high-quality, medical-grade silicone and is non-allergic and non-toxic if used properly. It is seen that after watching the informative video about menstrual cup, the level of knowledge of the study participants improved thereby emphasizing on the importance of awareness campaigns. With the help of female health care providers like Asha, Aanganwadi Workers and ANM, the policy makers can help educate the menstruating population about the use of menstrual cup.

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