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# Menstrual cup webinar series: A developing model of modified pre- and post-tests in the online teaching-learning of primary health care workers

Arti Gupta, Rajeev Aravindakshan, Vijayan Sharmila<sup>1</sup>, Venkatesh Reddy B, Yamini Marimuthu, Navya Krishna Naidu

## Abstract:

Menstrual hygiene management, especially in resource-limited settings, is challenging. The acceptability of the menstrual cup is increasing recently in western countries whereas, in developing countries like India, the awareness, acceptability, and use of menstrual cups are very limited. We assessed the effectiveness of modified pre-post-test teaching-learning methodology in an online webinar series on menstrual cups using Moore's outcome assessment. An online webinar series on menstrual hygiene and the menstrual cup was conducted to raise awareness about the usage of menstrual cups among the health care workers like Auxiliary Nurse Midwife (ANMs), Accredited Social Health Activist (ASHAs), and Anganwadi Workers (AWWs) of the Guntur district, Andhra Pradesh, India. The questions of modified pre- and post-test were displayed. The questions were displayed to participants using the polling option in zoom. A total of 1597 health care workers participated in the menstrual cup webinar series. Of the total, 72.7% of participants responded to the job title question of which ASHA, ANMs, and AWWs were 16.8%, 34.2%, and 41.9%, respectively. The baseline knowledge of menstrual cups among primary health care workers for "heard of the menstrual cup" and "ever used/know anyone using menstrual cup" was 36.89% and 11.67%, respectively. After the webinar among the primary health care workers, the maximum gain in knowledge was seen for "menstrual cup can be cleaned in the home," 94.53%, and the minimum gain in knowledge was on "unmarried girls can use menstrual cups," 50.42%. The modified pre- and post-test model predicted an overall 50 percent rise in the knowledge of primary health care workers by the webinar series about a different aspect of the menstrual cup. As online webinar providers aim to provide more performance-based learning activities, current approaches to continuing medical education may become obsolete. The single most essential shift in online webinar planners can make is to incorporate modified pre- and post-test to allow for interactive and formative assessment during webinar activities.

## Keywords:

Cups, learning, menstrual, online, pre-test, post-test, training

## Introduction

Menstrual hygiene management, especially in resource-limited settings, is very challenging due to a lack of knowledge, cultural beliefs, lack of information on best hygienic practices, lack of infrastructure,

and limited access to safe and affordable menstrual hygiene products.<sup>[1-3]</sup> The use of disposable sanitary pads is associated with many disadvantages like dryness, irritation, and rashes associated with the chemicals (dioxins, bisphenol A (BPA), herbicides, pesticides) in the disposable

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Department of Community and Family Medicine, All India Institute of Medical Sciences Mangalagiri, Andhra Pradesh, India,  
<sup>1</sup>Department of Obstetrics and Gynaecology, All India Institute of Medical Sciences Mangalagiri, Andhra Pradesh, India

### Address for correspondence:

Dr. Arti Gupta,  
Assistant Professor,  
Department of Community and Family Medicine, All India Institute of Medical Sciences Mangalagiri, Andhra Pradesh, India.  
E-mail: guptaarti2003@aismmangalagiri.edu.in, guptaarti2003@gmail.com

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pads.<sup>[4]</sup> It is also associated with uncomfortable odor. Using disposable pads limits the activity of women and is associated with a high incidence of staining of clothes.<sup>[4]</sup> Using disposable clothes also costs more for the entire reproductive period of women.<sup>[5]</sup> Disposable menstrual hygiene products harm the environment.<sup>[6]</sup> The usage of tampons is also associated with vaginal irritation, concerns about leaking and odor, change in vaginal pH, and an increase in the risk of urogenital infections.<sup>[7]</sup> The problems associated with the usage of disposable menstrual hygiene products are even more for school-going adolescent girls if adequate water supply and proper disposal systems are limited. Even though reusable cloth pads are environmentally friendly, they are associated with urogenital infections if not cleaned and dried properly. Literature shows that improper menstrual hygiene management is associated with school absenteeism and drop-out from school.<sup>[8,9]</sup>

An alternative method for menstrual hygiene management that overcomes the above disadvantages with disposal pads/tampons is the menstrual cup. A menstrual cup is a bell-shaped cup-like device made of medical-grade silicone.<sup>[10]</sup> It is inserted into the vagina during menstruation and the menstrual blood is collected in the cup. The menstrual cup needs to be sterilized once a month and a single cup can be used for 5–10 years. The advantages of using a menstrual cup are allergy-free, can be worn even during swimming/running/exercising, is not associated with odors, has no skin rashes, can be used for up to 12 hours comfortably, has no risk of toxic shock syndrome, and is more environmentally friendly. Since it can be used for up to 5–10 years, it is more cost-effective as compared to disposable pads/tampons. A systematic review and meta-analysis on the availability, acceptability, safety, and use of menstrual cups reported that they are a safe alternative for menstrual hygiene management.<sup>[3]</sup> The acceptability of the menstrual cup is increasing recently in western countries whereas in developing countries like India, the awareness, acceptability, and use of menstrual cups are very limited. In the present study, we assessed the effectiveness of a modified pre-post-test teaching-learning methodology during an online session on the novel and inexpensive approach to menstrual hygiene in a receptive population belonging to a traditional society.

## Materials and Methods

### Study design and setting

An online webinar series on menstrual hygiene and the menstrual cup was conducted by the Department of Community and Family Medicine and Department of Obstetrics and Gynecology, All India Institute of Medical Sciences, Mangalagiri mainly to raise awareness about the usage of menstrual cups.

### Study participants and sampling

The health care workers like Auxiliary Nurse Midwife (ANMs), Accredited Social Health Activists (ASHAs), and Anganwadi Workers (AWWs) of the Guntur district, Andhra Pradesh State were educated about the usage of menstrual cups for menstrual hygiene management. To prevent the spread of infection, instead of an in-person meeting, online webinar series was selected as the mode of health education considering the coronavirus disease (COVID-19) pandemic situation.

The activity was conducted in the first fortnight of December 2021, three days a week with nearly 2 h a day. Permissions were taken from District Medical and Health Officer, and Project Director Integrated Child Development Scheme (ICDS), Guntur. The session was scheduled by four revenue divisions, namely, Guntur, Tenali, Narasaraopet, and Gurazala for ASHAs and ANMs under the National Health Mission (NHM) and by 23 projects of ICDS, Guntur [Figure 1]. The sessions for four revenue divisions were further divided into rural and urban areas. District Program Officer NHM, Divisional Program Officer NHM, and Child Development Project Officers were contacted to share time schedules and webinar links to the ASHAs, ANMs, and AWWs, respectively. In addition, a list of Medical Officers was retrieved and schedules and webinar links for the ASHAs and ANMs were shared for ensuring maximum participation.

The increase in knowledge after health education intervention is usually effectively assessed using the pre- and post-test model.<sup>[11]</sup> During this online webinar, the time was very limited and some participants might leave during the webinar after their interesting sessions. Also, the participants were grass-root level health workers and most of them were not technology-friendly to attend reply to the pre- and post-test emails. Due to the reasons mentioned above, it was not possible to conduct the pre- and post-tests in the online webinar series. Hence, we designed a modified pre- and post-test to determine the knowledge gained during the online learning session.

### Data collection tool and technique

A set of 17 questions were prepared regarding menstrual hygiene and menstrual cup for assessing online webinar series using Moores's first three levels of outcome measurements<sup>[12]</sup> [Figure 2]. Modified pre- and post-test measured an increase in knowledge of the group rather than individual participants. The questions of modified pre- and post-test displayed are in Table 1. The questions were displayed to participants using the polling option in zoom. Polling was like asking questions in live classrooms. The trainer generated either single- or

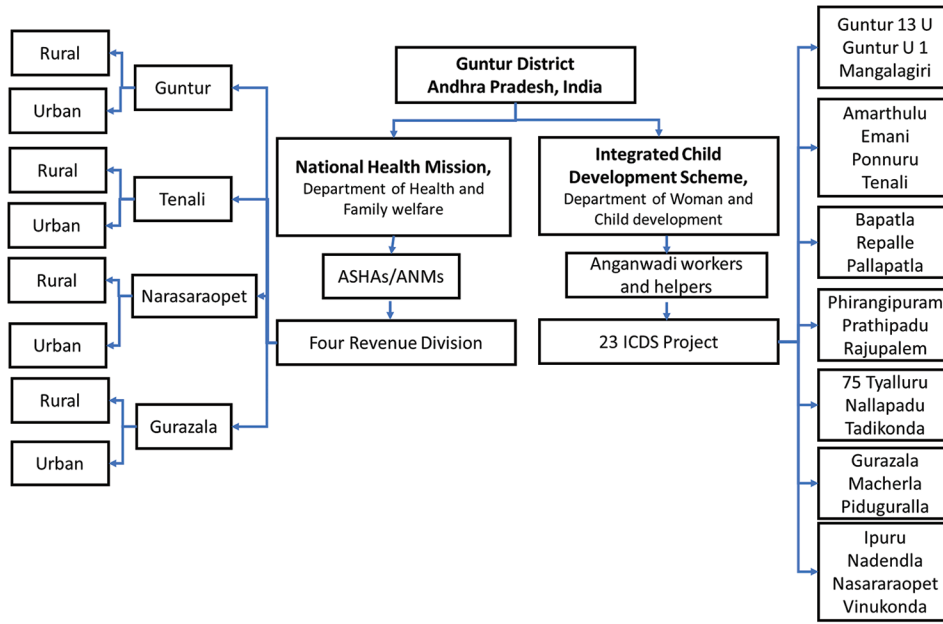


Figure 1: The organizational diagram indicating the participants

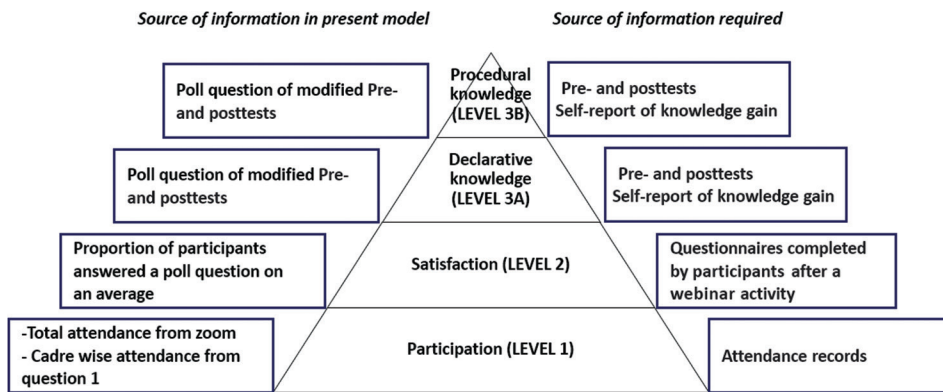


Figure 2: Moore's outcome equivalents in the study

**Table 1: Questions of modified pre- and post-test in menstrual cup webinar series**

Were displayed on the screen after the introductory session on menstrual hygiene	Were displayed on the screen after the session on menstrual cups
1. What is your Job Title?	8. Can unmarried girls use menstrual cups?
2. Have you ever heard of a menstrual cup?	9. Can we wear menstrual cups while running/exercising/swimming?
3. Out of every 100 women, do you know who does not use sanitary pads?	10. How often do we need to empty the menstrual cup?
4. What are the reasons for not using sanitary pads?	11. Will the blood collected in the menstrual cup backflow?
5. How many per 100 women you know have abnormal vaginal discharge?	12. Are insertion and removal of menstrual cups painful?
6. Are there any harmful effects on the environment of using sanitary pads?	13. Can we use menstrual cups during sleep?
7. Have you ever used/know anyone using a menstrual cup?	14. Does using a menstrual cup break the women's hymen?
	15. Can we do the urination and defecation with menstrual cups?
	16. Can we use the menstrual cups while using a Copper-T?
	17. Can menstrual cups be cleaned in the home?

multiple-choice polling questions for online sessions using the polling function. During the session, the trainer would be able to start the poll and collect replies from

participants. The questions translated into the local language, i.e., Telugu were read out to the audience in the local language with a quick explanation. Each

question was displayed for 1 min and 30 s. It was aimed to study the increase in the proportion of participants answering question numbers 2 and 7 as the number of participants answering correctly for questions from 8 to 17, respectively. All data were entered and analyzed using Microsoft Excel 2011. Proportions and means were calculated as applicable. All permissions have been obtained from the appropriate authority. Ethical approval was obtained from Institute Ethics Committee.

### Results

In the first level of Moore’s outcome assessment, a total of 1597 health care workers participated in the menstrual cup webinar series. Of the total, 72.7% of participants responded to the job title question of which ASHA, ANMs, and AWWs were 16.8%, 34.2%, and 41.9%, respectively. The proportion of participants who answered a question is shown in Table 2. Of the 546 responses, 172 (30.5%) and 180 (31.91%) primary health care workers answered that out of every 100 women they know, 50 women and 75 women do not use sanitary pads, respectively. The primary reasons for not using sanitary pads were the cost of sanitary pads (48.84%) and myths related to the use of sanitary pads (28.05%), respectively. Of the 718 responses, 298 (41.50%) primary health care workers told out of every 100 women they know, 25 women have complaints of abnormal vaginal discharge. Of the 791 responses, 448 (56.64%) primary health care workers had no knowledge or incorrect knowledge regarding the harmful effects of using sanitary pads on the environment [Table 3]. The baseline knowledge of menstrual cups among primary health care workers for “heard of the menstrual cup” and “ever used/know anyone using menstrual cup” was 36.89% and 11.67%, respectively. After the webinar among the primary health care workers, the maximum gain in knowledge was seen for “menstrual cup can be cleaned in the home,” 94.53%, and the minimum gain in knowledge was on “unmarried girls can use menstrual cups,” 50.42%. The modified pre- and post-test model predicted an overall 50 percent (R<sup>2</sup> 0.509) rise in the knowledge of primary health care workers by the webinar series about a different aspect of the menstrual cup. The knowledge levels of

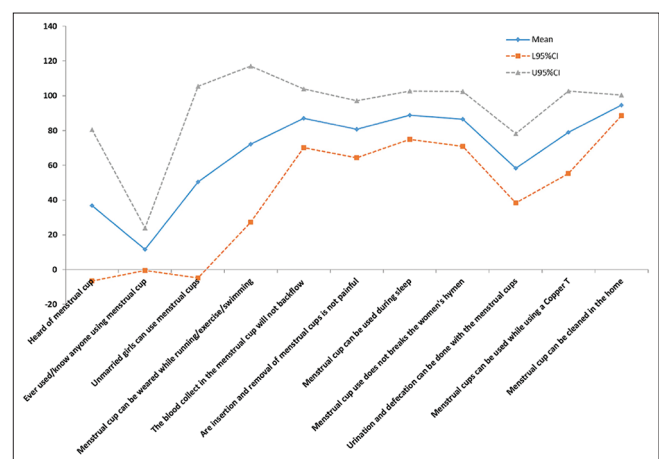
primary health care workers for various domains of the menstrual cup on each day are shown in Figure 3. In addition, the overall increase in knowledge of primary health care workers for the menstrual cup at baseline level is seen from Day 1 to Day 7 from 25.34% on Day 1 to 80.47% on Day 7. 68.16% of primary health care workers correctly acknowledged the need to empty the menstrual cup every 12 hourly. Insertion and removal of menstrual cups are not painful, menstrual cups can be used during sleep, and menstrual cup use does not break the women’s hymen was replied correctly by 80.72%, 88.87%, and 86.69% of primary health care workers, respectively.

### Discussion

The poll data collected from the online webinar series on “Menstrual hygiene and usage of menstrual cup” conducted among the primary health care workers have shown nearly one-third of them were aware of the menstrual cup as a method for menstrual hygiene management. Over 40% of primary care workers reported out of 100 women they know that 75 to 100 do not use sanitary pads. The common reasons for not using sanitary pads were costly, myths, many females in the family, rashes, and non-availability in the market. Similarly, a South Indian study done by Senapathi *et al.*<sup>[13]</sup> had showed that cost, accessibility, discomfort, and disposal problems were reported as the common causes for not using sanitary pads. 43.4% of the participants answered that there were harmful effects on the environment due to disposable sanitary pads. On the contrary, a study done in the UK in 2019 showed that 86% of the respondents were aware of the environmental effects of disposable products.<sup>[6]</sup> In the present study, only 11.7% reported that they used or knew someone who uses a menstrual cup. In a study done among medical students, 93% of them were aware of the menstrual cup.<sup>[14]</sup> This difference could be due to the literacy status of the study participants. In India, under

**Table 2: Moore level 2 in menstrual cup webinar series**

Day	Maximum participation		Min respondents		Max respondents	
	n	%	n	%	n	%
1	317	51.10	25	7.89	162	51.10
2	511	63.06	115	22.50	256	50.10
3	198	22.52	80	40.40	132	66.67
4	222	27.52	50	22.52	140	63.06
5	137	16.95	50	36.50	82	59.85
6	109	13.54	33	30.28	79	72.48
7	103	12.72	32	31.07	59	57.28



**Figure 3:** Increase in knowledge of the target group of menstrual cup webinar

**Table 3: Menstrual hygiene and its components**

Domain	Category	Total Participants (n=1597)		
		Respondent Participant	n	%
Job Title	Officers	593	22	3.71
	ASHA		100	16.86
	ANM		203	34.23
	Anganwadi worker		249	41.99
	Others		19	3.20
Out of every 100 women, do you know who does not use sanitary pads	0 women	564	43	7.62
	10 women		92	16.31
	25 women		83	14.72
	50 women		172	30.50
	75 women		180	31.91
	100 women		34	6.03
Reasons for not using sanitary pads*	Costly	606	296	48.84
	Myths		170	28.05
	Rashes		105	17.33
	Not available in market		18	2.97
	Many females in the family		107	17.66
	others		159	26.24
Per 100 women you know have abnormal vaginal discharge	0 women	718	159	22.14
	10 women		120	16.71
	15 women		140	19.50
	25 women		298	41.50
	50 women		55	7.66
Are there any harmful effects on the environment of using sanitary pads	Yes	791	343	43.36
	No		322	40.71
	Do not know		126	15.93

\*Multiple options

the NHM and ICDS, respectively, ASHA and AWWs are generally women between the ages of 25 and 45, with formal education up to high school (10<sup>th</sup> class).<sup>[15,16]</sup>

Over two-thirds (68.2%) of primary health care workers correctly acknowledged the need to empty the menstrual cup every 12 h. Only 35% were aware of the correct emptying time for menstrual cups in a study done by Meghana *et al.*<sup>[17]</sup> The primary reason for this could be the knowledge in the present study was assessed during the menstrual cup teaching-learning session. 87% of women correctly reported that the blood collected in the cup will not backflow while using the menstrual cup.

The study documents the increase in the knowledge of over half of primary health care workers regarding the use of menstrual cups using modified pre- and post-tests. In behavioral research, pre- and post-test designs are commonly utilized to measure the effectiveness of the intervention.<sup>[18,19]</sup> For awareness related to menstrual cup usage, 50.4% of participants reported correctly that unmarried girls can use a menstrual cup and 72.1% reported that the cup can be worn during running/exercise/swimming. Another study reported that 84.1% and 81.7% of the girls were aware of the fact that virgins can use the cup and it can be used during the activities like swimming, respectively.<sup>[14]</sup> 88.9% of

women reported that menstrual cups can be used while sleeping, 58.4% reported that they can be worn during urination and micturition, and 79.1% mentioned that they can be used along with the Copper-T/intrauterine contraceptive devices (IUCDs) inside. As a result, our findings imply that using a modified pre- and post-test tool will help online listeners to focus on the essential subjects that would be taught, allowing them to achieve the learning objectives with greater comprehension.

The study reported that primary health care workers were unaware of the advantages of using menstrual cups instead of sanitary pads. Menstrual cups are less common in use in the Indian community. As a result, primary health care workers lack a thorough understanding of the method of using a menstrual cup. In a developing nation like India, women need menstruation products that are effective, safe, and economical. The policymakers and pollution control aim at a menstruation product that is effective, safe, and economical while also ecofriendly. A menstrual cup is one such option. Acceptance of the cup was shown to need familiarization over multiple menstrual cycles, as well as peer support in underdeveloped nations.<sup>[3]</sup> Menstrual cups are a safe item that is used all over the world. Awareness and usage of menstrual cups must be promoted in India since they have the potential to be

a good menstruation management solution that is both ecofriendly and cost-effective.

Our study is the first of its kind to assess the knowledge about menstrual cups among primary health care workers and the impact of online learning intervention with modified pre- and post-tests. In the current scenario of the COVID-19 pandemic and considering the resource-limited setting, virtual training was conducted and a large number of ASHAs, AWWs, and ANMs were trained about the menstrual cup and hygiene practices.

### Limitation and recommendation

There are some limitations of the study. Compared to the conventional pre-and post-test model, only aggregated data could be collected, and individual-level gain in knowledge with awareness could not be done. The complete response of all the participants for all the poll questions could not be ensured due to technical issues. During the online training, the study participants tended to join and leave the meeting and the duration of the display of poll questions was limited. These might have affected the response of the study participants. In addition, two to four primary health care workers were sharing screens from many primary health care centers, which could not be quantified. The way that continuing medical education is now done may become obsolete as online webinar providers work to offer more performance-based learning activities. Modified pre- and post-tests that allow for interactive and formative evaluation during webinar activities are the single most important change that online webinar organizers may implement.

### Conclusion

As online webinar providers aim to provide more performance-based learning activities, current approaches to continuing medical education may become obsolete. Webinar planners should review the characteristics of current programs to see whether components of the conceptual model offered will assist them in developing and evaluating more performance-based webinar activities. The single most essential shift in online webinar planners can make is to incorporate modified pre- and post-test to allow for interactive and formative assessment during webinar activities. The evaluative interactive with modified pre-post and post-test sessions for online teaching-learning of primary health care workers in the menstrual cup is the way forward, which will, in turn, take the message to thousands of women in their outreach areas.

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### Conflicts of interest

There are no conflicts of interest.

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