



## Comparing Two Different Methods of Communication by Assessing the Refinement in Knowledge Among Adolescent Girls on Menstrual Hygiene– A Comparative Interventional Study

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### Abstract

#### Introduction

Though menstruation is a physiological process, the influence of social taboos, a lack of information, and inaccurate awareness among adolescent girls make menstrual health an important factor to be taken care of. This study has been conducted to compare PowerPoint presentations and group discussions in improving the awareness of menstrual hygiene among adolescent girls in schools and suggest better one for schools to follow the same for better outcomes.

#### Methodology

This comparative interventional study was done in the Perambalur district with Adolescent girls aged 12 to 16. Girls who did not attain menarche and ones who refused to participate were excluded from this study. A semi-structured questionnaire was created to assess their current knowledge about menstruation. The education was provided in two formats: group discussion and PowerPoint presentation and the knowledge was reviewed using the same questionnaire immediately and again after a month and the difference in knowledge was assessed with McNemer's test.

#### Results

Among the 70 girls who participated in the study, 61.4 per cent belonged to the Group discussion batch and 38.6 belonged to

the PowerPoint presentation batch. Among these 8.6 per cent of them did not have a separate toilet. Factors like the duration of the menstrual cycle, knowledge about an ideal interval of changing pads, and awareness about the complications of poor menstrual hygiene were taught and assessed. Both batches have shown improvement in the knowledge before and after intervention with statistical significance. (P value less than 0.005 with 95 per cent confidence interval).

#### Conclusion

Both interventions were equally efficient in improving the knowledge and awareness of adolescent girls about menstrual hygiene but a PowerPoint presentation having a pictorial advantage can be suggested as a better source for creating awareness of menstrual hygiene in school-going girls. Rural schools which lack technological advancement can use Group discussions to create the same effect as both are equally potent.

**Keywords:** Adolescent girls and India; Group discussion, Menstrual hygiene; PowerPoint presentation

#### Introduction

According to the WHO, adolescence is a vital time in human growth and development that occurs between the ages of ten and nineteen, after childhood but before adulthood [1] Menstruation is a physiological process that marks the beginning of a woman's reproductive life. Yet social taboos, a lack of information and inaccurate awareness among adolescent girls

display it to be an impure occurrence in Indian society resulting in unnecessary constraints in their day-to-day routines [2] Education for girls has a long-term positive impact on personal well-being as well as economic and social growth, particularly in low-income areas. Educated girls not only participate in the formal labour market and earn higher wages, but they also engage in healthy behaviours such as marrying later in life and having fewer children, potentially ensuring better health and education for their children, which can help to alleviate poverty and contribute to the development of a country. However, many school-age girls avoid going to school during menstruation due to shame, fear of developing noticeable stains on their clothes, a lack of a private and secure space to handle menstruation in school, and dysmenorrhoea, according to several primarily qualitative research.[3,4] Adolescent girls being one of the most vulnerable groups in society and forthcoming mothers require adequate and correct knowledge of menstrual hygiene to reduce their risk of developing reproductive or sexually transmitted infections (RTI/STI) which are a significant burden on our society, rendering many females infertile and causing other negative health outcomes. So, if sound knowledge is delivered at the basic level, a healthy girl will grow up to be a healthy mother, contributing to the reduction of maternal and infant mortality, resulting in total women's reproductive health empowerment.[5,6] Adolescent girls and women must receive health education in order to be self-sufficient in managing menstruation difficulties.[7] With this above background, this study has been conducted with the aim of assessing and comparing the refinement of knowledge and practice of menstrual hygiene among school-going children between the teaching methods of PowerPoint presentation and group discussion.

## Materials and Methods

During the months of December 2019 and March 2020, a comparative interventional study was done in the Perambalur district of Tamil Nadu. Due to a lack of time and resources, two private schools, Dhanalakshmi Srinivasan higher secondary school and Rovers CBSE higher secondary school were chosen from all the high schools in the Perambalur district. Both of the institutions had a co-educational atmosphere. Adolescent girls aged 12 to 16 were included in the study. After obtaining consent from the students and their parents, the study was done among the girls who were willing to participate. Approximately 94 of them agreed to take part in the study. Among them, about 70 girls had reached menarche and were included in the study. We went to the schools before the pre-test to acquire

permission to perform the study and provide health education. A semi-structured questionnaire in English was created to assess their current level of knowledge about menstruation. There were four sections to the questionnaire. The participant's socio-demographic information was questioned in Section A. Section B includes questions to assess the knowledge regarding menstruation (source of information, normal age of menarche, normal menstrual cycle length, normal menstrual bleeding length and anatomy related to menstruation). Questions on the practices (absorbent used, frequency of changing pads, absorbent disposal) and restrictions during menstruation (taking bath, sleeping, entering the kitchen, entering pooja room, attending schools, playing sports) were found in Section C. In section D, questions about awareness of the consequences of poor menstrual hygiene were addressed. Following the collection of completed questionnaires, health education about menstruation was provided in two formats: group discussions and PowerPoint presentations (each session lasting approximately 45 minutes) about the physiology of menstruation, health practices, myths about menstruation, and the consequences of poor menstrual hygiene. Following that, a question-and-answer session was held to clear up any remaining doubts. The knowledge was then promptly reviewed using the same questionnaire immediately and again after a month. All the obtained data were entered in MS Excel and the results were analysed using SPSS version 21. McNemar's test was used separately for both groups to assess the difference in knowledge acquired after the intervention.

## Results

About 70 girls participated in the study. The mean age of the study participants was 14 years. About 61.4 percent of the study participants comprised the group discussions group and 38.6 percent of the girls comprised the PowerPoint group. Most of them (about 87 percent were Hindu by religion. About 74 percent of girls had nuclear families. The general characteristics of the study participants were shown in **table 1**. Data about the factors related to menstruation were shown in table 2. The association for menstrual cycle length, duration of menstrual bleeding, the ideal interval of changing pads, about sun drying of the undergarments, awareness of complications of poor menstrual hygiene, opinion on white discharge and organ responsible for menstrual bleeding between pre-test and review test (after one month) were shown in **table 3, 4, 5, 6, 7, 8 and 9** respectively. The P – Value less than 0.005 were considered statistically significant with a 95 percent confidence interval. For finding an association, McNemar's test was used separately for both groups (PowerPoint presentation and group discussion).

S. No	General characteristics	Frequency	Percent	
1	Age (in Years)	Mean - 14.01 Standard deviation - 1.07		
2	Group	Group discussion	43	61.4
		Power-point presentation	27	38.6
3	Class	7	11	15.7
		8	20	28.6
		9	27	38.6
		11	12	17.1

4	Religion	Christian	3	4.3
		Hindu	61	87.1
		Muslim	6	8.6
5	Type of family	Joint family	18	25.7
		Nuclear family	52	74.3
6	Mother's education	Graduation	30	42.9
		High school certificate	14	20.0
		Illiterate	3	4.3
		Intermediate or diploma	6	8.6
		Middle school certificate	10	14.3
		Primary school certificate	3	4.3
		Profession of honours	4	5.7
7	Mother's occupation	Employed	29	41.4
		Unemployed	41	58.6

**Table 1:** General characteristics of the study population (n = 70).

S. No	Factors related to menstruation	Frequency	Percent	
1	Separate toilet in the house	No	6	8.6
		Yes	64	91.4
2	Source of information regarding menstruation	Grandmother	1	1.4
		Friends	3	4.3
		Health workers	2	2.9
		Mother	64	91.4
3	Sun drying undergarments	No	6	8.6
		Yes	64	91.4
4	Skin rashes	No	55	78.6
		Yes	15	21.4
5	Forced to sleep separately	No	43	61.4
		Yes	27	38.6
6	Restricted for school	No	68	97.1
		Yes	2	2.9
7	Restricted from playing sports	No	61	87.1
		Yes	9	12.9

**Table 2:** Distribution of study participants according to the factors related to menstruation (n = 70).

Group				Review test menstrual cycle length		Total	P-Value
		Said correctly	Count	Said wrongly	Count		
Group discussion	Pre-test menstrual cycle length	Said correctly	Count	19	4	23	.004
			%	82.6%	17.4%	100.0%	
		Said wrongly	Count	18	2	20	
			%	90.0%	10.0%	100.0%	
Power-point presentation	Pre-test menstrual cycle length	Said correctly	Count	5	2	7	< 0.001
			%	71.4%	28.6%	100.0%	
		Said wrongly	Count	18	2	20	
			%	90.0%	10.0%	100.0%	
Total	Pre-test menstrual cycle length	Said correctly	Count	24	6	30	< 0.001
			%	80.0%	20.0%	100.0%	
		Said wrongly	Count	36	4	40	
			%	90.0%	10.0%	100.0%	

**Table 3:** Association for menstrual cycle length between Pre-test and review test among the study participants (n = 70).

Group				Review test duration of normal menstrual bleeding		Total	P-Value
				Said correctly	Said wrongly		
Group discussion	Pre-test duration of normal menstrual bleeding	Said correctly	Count	22	5	27	0.143
			%	81.5%	18.5%		
		Said wrongly	Count	12	4	16	
			%	75.0%	25.0%		
Power-point presentation	Pre-test duration of normal menstrual bleeding	Said correctly	Count	6	2	8	
			%	75.0%	25.0%		
		Said wrongly	Count	19	0	19	
			%	100.0%	0.0%		
Total	Pre-test duration of normal menstrual bleeding	Said correctly	Count	28	7	35	
			%	80.0%	20.0%		
		Said wrongly	Count	31	4	35	
			%	88.6%	11.4%		

**Table 4:** Association for duration of normal menstrual bleeding between Pre-test and review test among the study participants (n = 70).

Group				Review test ideal interval of changing pads		Total	P-Value
				Correctly said	Wrongly said		
Group discussion	Pre-test ideal interval of changing pads	Correctly said	Count	25	2	27	0.002
			%	92.6%	7.4%		
		Wrongly said	Count	15	1	16	
			%	93.8%	6.3%		
Power-point presentation	Pre-test ideal interval of changing pads	Correctly said	Count	10	1	11	
			%	90.9%	9.1%		
		Wrongly said	Count	16	0	16	
			%	100.0%	0.0%		
Total	Pre-test ideal interval of changing pads	Correctly said	Count	35	3	38	
			%	92.1%	7.9%		
		Wrongly said	Count	31	1	32	
			%	96.9%	3.1%		

**Table 5:** Association for the ideal interval of changing pads between Pre-test and review test among the study participants (n = 70).

Group				Review test is it essential to sundry undergarments		Total	P-Value
				No	Yes		
Group discussion	Pre-test is it essential to sundry undergarments	No	Count	0	6	6	0.125
			%	0.0%	100.0%		
		Yes	Count	1	36	37	
			%	2.7%	97.3%		
Power-point presentation	Pre-test is it essential to sundry undergarments	No	Count	0	5	5	
			%	0.0%	100.0%		
		Yes	Count	1	21	22	
			%	4.5%	95.5%		
Total	Pre-test is it essential to sundry undergarments	No	Count	0	11	11	
			%	0.0%	100.0%		
		Yes	Count	2	57	59	
			%	3.4%	96.6%		

**Table 6:** Association for sun drying undergarments between Pre-test and review test among the study participants (n = 70).

Group				Review test aware of complications of poor menstrual hygiene		Total	P-Value
				No	Yes		
Group discussion	Pre-test aware of complications of poor menstrual hygiene	No	Count	3	15	18	0.041
			%	16.7%	83.3%		
		Yes	Count	5	20	25	
			%	20.0%	80.0%	100.0%	
Power-point presentation	Pre-test aware of complications of poor menstrual hygiene	No	Count	4	11	15	0.006
			%	26.7%	73.3%	100.0%	
		Yes	Count	1	11	12	
			%	8.3%	91.7%	100.0%	
Total	Pre-test aware of complications of poor menstrual hygiene	No	Count	7	26	33	0.001
			%	21.2%	78.8%	100.0%	
		Yes	Count	6	31	37	
			%	16.2%	83.8%	100.0%	

**Table 7:** Association for awareness of complications due to poor menstrual hygiene between the Pre-test and review test among the study participants (n = 70).

Group				Review test opinion about white discharge		Total	P-Value
				Abnormal	Normal		
Group discussion	Pre-test opinion about white discharge	Abnormal	Count	3	7	10	0.344
			%	30.0%	70.0%	100.0%	
		Normal	Count	3	30	33	
			%	9.1%	90.9%	100.0%	
Power-point presentation	Pre-test opinion about white discharge	Abnormal	Count	0	7	7	0.180
			%	0.0%	100.0%	100.0%	
		Normal	Count	2	18	20	
			%	10.0%	90.0%	100.0%	
Total	Pre-test Opinion about white discharge	Abnormal	Count	3	14	17	0.064
			%	17.6%	82.4%	100.0%	
		Normal	Count	5	48	53	
			%	9.4%	90.6%	100.0%	

**Table 8:** Association of opinion about white discharge between Pre-test and review test among the study participants (n = 70).

Group				Review test menstrual bleeding organ		Total	P-Value
				Said correctly	Said wrongly		
Group discussion	Pre-test menstrual bleeding organ	Said correctly	Count	15	4	19	0.019
			%	78.9%	21.1%	100.0%	
		Said wrongly	Count	15	9	24	
			%	62.5%	37.5%	100.0%	
Power-point presentation	Pre-test menstrual bleeding organ	Said correctly	Count	8	3	11	0.021
			%	72.7%	27.3%	100.0%	
		Said wrongly	Count	13	3	16	
			%	81.3%	18.8%	100.0%	
Total	Pre-test menstrual bleeding organ	Said correctly	Count	23	7	30	0.001
			%	76.7%	23.3%	100.0%	
		Said wrongly	Count	28	12	40	
			%	70.0%	30.0%	100.0%	

**Table 9:** Association for organ responsible for menstrual bleeding between Pre-test and review test among the study participants (n = 70).

## Discussion

The onset of menstruation is the most significant event that occurs in adolescent girls. It is usual for girls to have a variety of questions and concerns about menstruation. Instilling correct knowledge about menstruation at the appropriate time will prevent children from forming false beliefs and will help them avoid a variety of harmful genital and urinary infections, which are a major source of revenue for our primary care physicians. As a result, menstruation hygiene is critical in defining a woman's overall health [8]. In our study, the mean age of the study participants was 14 years. Similar to our study a study done by Singh et al., in 2021 in Uttar Pradesh, among 9 to 19 years girls found that maximum number of study participants belong to Hindu religion. This shows the prevalence of the Hindu religion among the Indian population [8] About 74 percent of girls had nuclear families. In contrast to our study a study done by Singh et al., in 2021, Uttar Pradesh, among 9 to 19 years girls found that maximum study participants belonged to joint families. This difference may be due to the difference in the geographical distribution of the study participants in both the study [8] Similar to the above discussion a study done by Choudhary et al., in 2019 in Rajasthan shows that a maximum number of the study participants belonged to joint family and were Hindus by religion [9]. Among 8.6 percent of the girls have no separate toilet in the house. In contrast to our study, a study done by Paria et al., in 2014, in West Bengal to compare rural and urban difference found that 83.6 percent of the girls in urban and 56.4 percent of the girls in rural have separate toilet facility. This shows the improvement in the general sanitation around recent years in India [10]. In contrast to the above statement a study done by Deshpande et al., in 2018, in Maharashtra with the aim of assessing menstrual hygiene among urban slum found that only 21 percent of the study participants have separate toilet in the house which shows the need for further improvement in the slum areas [11]. A systematic review done by Van Eijik et al., in 2016 with 138 studies done in India, from 2000 to 2015, states that only half of the study participants have separate toilet in home, about 25 percent of the girls were restricted for attending school [12]. But in our study about 3 percent of the girls had been restricted for going to school and about 13 percent were restricted to playing sports. This indicates the effectiveness of the awareness programme in India and also signifies the role of community participation. But in contrast to the above discussion a qualitative study done by Garg et al., in 2021 in New Delhi in which about 30 accredited social health activists, 30 Anganwadi Workers, and 30 auxiliary nurse midwives participated in in-depth interviews, as well as five focus group talks with 28 government school instructors had concluded that the frontline workers have failed to give information about optimal menstrual hygiene management. [13] This indicates need for further research to fill the gap of knowledge. Our study shows, about 38.6 percent of girls were forced to sleep separately during menstrual period time. In contrast to the above statement a study done by Deshpande et al., in 2018, in Maharashtra with the aim of assessing

menstrual hygiene among urban slum found that about 27 percent of the study participants were sit/sleep separately [11]. This shows that the prevalence of social stigma on restrictions is high in Perambalur district. Coming to duration of menstrual cycle, knowledge about ideal interval of changing pads, and awareness about the complications of poor menstrual hygiene, both PPT and Group discussion have shown improvement in the knowledge before and after intervention and that difference in proportion is statistically significant by McNemar's test. Regarding duration of normal menstrual bleeding, PPT is more efficient in improving knowledge than group discussion. A intervention study done by Dwivedi et al., in 2020 in Rajasthan, intending to assess the effectiveness of structural programme through peer educators conclude that the intervention gave statistically significant change in the attitude and practice of menstrual hygiene among the adolescent girls [14]. This indicates the need for intervention specifically focused on menstrual hygiene in schools.

## Strength and Limitations of the Study

In our study, the data were collected by a single investigator for both the pre-test and review tests. A pilot study was done to improve the validity of the study questionnaire. A pilot study was done to improve the validity of the study questionnaire. Yet, the members in two groups were not equal due to variations in the number of students in each class which may influence the study results. Due to resource constraints, only two schools were selected with convenient sampling so a better result will be obtained by increasing the number of samples with a better sampling technique.

## Conclusion

Among the teaching-learning methods, both PowerPoint presentation and Group discussion were equally efficient in improving the knowledge and awareness of the adolescent girls about menstrual hygiene. Powerpoint Presentations were noted to be more efficacious than group discussions in refining the knowledge about duration of menstrual bleeding. Owing to feasibility and pictorial advantage, PowerPoint presentations can be used in the schools of Tamilnadu to improve the menstrual hygiene knowledge among adolescent girls and contribute to the betterment of India.

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