

Impact of health education intervention on menstruation and its hygiene among urban school-going adolescent girls in Thiruvallur, Tamilnadu

Gomathy Parasuraman¹, Vinodhini Vijay¹, Balaji S¹, Nisha B¹, Ruma Dutta¹, Timsi Jain¹, Anantha Eshwar P²

¹Department of Community Medicine, Saveetha Medical College, ²Department of Community Medicine, Sri Balaji Medical College, Tamil Nadu, India

ABSTRACT

Introduction: Adolescent girls require specific and special attention since they are the most vulnerable group not only in terms of their social status but also their health. Poor menstrual hygiene can lead to developing infections and other complications. Therefore, this study was conducted with the aim of assessing the impact of health education on menstrual hygiene among urban school-going adolescent girls. **Methodology:** A quasi-experimental, pre and post-test study was conducted among adolescent girls aged between 11 to 17 years from two public schools in the urban field practice area of tertiary care medical college in Thiruvallur district of Tamilnadu. A pre-interventional survey was done using a pretested validated questionnaire. Multipronged health education intervention was administered, and its effectiveness was measured after four months using the same tool. Frequencies, percentages, median, and range were used to describe variables. 'Wilcoxon signed-rank test' and the "Mann-Whitney U-" test were used for inferential statistics. **Results:** There was a statistically significant ($P = 0.0001$) improvement in the knowledge of menstruation, perceived attitude, and practice of good menstrual hygiene from pre to post-test after the intervention. Demographic factors such as age, mother's education, and socio-economic status, and Menstrual characteristics such as age at menarche, regular menstrual flow, absence of dysmenorrhea, and getting menstruation advice before menarche were found to be significantly associated with the post-test median scores. **Conclusion:** A planned and structured health education program should be addressed to adolescent girls both at schools and community settings for improving menstruation-related knowledge and practices.

Keywords: Adolescent girls, health education intervention, menstrual hygiene, menstruation, school-based

Introduction

Adolescence is the phase of life between childhood and adulthood which ranges from 10 to 19 years of age. About 1/6th of the global population are adolescents. It is a unique stage of human development during which the individuals experience

rapid physical, cognitive, and psychosocial growth.^[1] Adolescent girls require specific and special attention since they are the most vulnerable group not only in terms of their social status but also their health.^[2,3] The onset of menstruation and the development of secondary sexual characters are the important changes that occur during the adolescent phase in girls. Menstruation is a normal physiological process of the discharge of the blood from the uterus, which is unique to all females, and occurs periodically throughout the childbearing ages except during pregnancy and lactation.^[4] Although it is a normal process, there are several

Address for correspondence: Dr. Nisha B, Department of Community Medicine, Saveetha Medical College and Hospital, Thandalam - 602 105, Tamil Nadu, India. E-mail: drnishacm2014@gmail.com

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misconceptions and practices linked with it, resulting in adverse health outcomes.^[5]

During menstruation, it is essential to practice good hygiene, such as the use of sanitary pads and adequate washing of the genital areas. Poor menstrual hygiene can lead to developing reproductive tract infections, urinary tract infections, pelvic inflammatory disease, and other complications.^[6,7] In developing countries like India, there is stigma referred to as the “culture of silence,” and as by the name, menstruation is rarely discussed in home and in schools. Girls and even teachers are unaware of the above-mentioned ill health effects due to ignorance to learn about them.^[8] Studies have shown that most adolescent girls have incomplete and inaccurate information about menstrual physiology and hygiene.^[9,10] Hence it is important to educate the girls regarding the basic knowledge on menstruation and ensure that they follow proper hygiene. There are many cross-sectional studies conducted on menstrual hygiene, which only depicted the level of knowledge and practices. But with an intervention with health education, it can help in not only accessing but also improving the level of knowledge and practices. Hence an interventional study was conducted with the aim of assessing the impact of health education on menstrual hygiene among urban school-going adolescent girls.

Methodology

A quasi-experimental, pre and post-test study was conducted among adolescent girls aged 11 to 17 years from two public schools in the urban field practice area of tertiary care medical college in Thiruvallur district of Tamilnadu for four months period from November 2019 to February 2020. Two co-education public high schools were randomly selected with well-constructed walls and convenient places for education intervention. After obtaining necessary permissions and approval from the institutional ethics committee, a total of 250 adolescent girls who have attained menarche aged 11 to 17 years from class 8th to 12th standard were included in the study. Oral assent from adolescent and written consent from parent/guardian was obtained before the commencement of the study through respective class teachers.

The estimated sample size of the study was 227 (Pairs) to achieve a power of 85% and with 5% significance for detecting an effect size of 0.20 between the pairs using the ‘Statulator’ online sample size calculator.^[11] After including a 10% non-response rate, the total required sample was 249. Multistage random sampling with the first stage being Simple random sampling method was used to select ten classrooms from each school by lottery method, and sampling frame of all eligible adolescent girls was prepared from attendance register maintained at each classroom and used for selecting 25 study participants from each class by simple random sampling method using computer-generated random numbers.

The study was conducted in the following three phases:

1. Pre-intervention (Data Collection Phase)

Data Collection Tool: Pretested semi-structured questionnaire containing four domains: Socio-demographic domain – contained personal and menarche-related characteristics, Knowledge domain – included questions on the physiology of menstruation like origination of blood, the flow of the cycle, phases of menstruation, and knowledge on irregular cycles. Practices and attitude included questions like the type of absorbent; wash and dry used clothes; how often they change pads in schools and in their homes; during menstruation, how they wash external genitalia; do they attend religious functions; do they touch food; do they touch members; do they attend school; etc.

A total of 30 questions were asked, containing eight questions for Knowledge, seven questions for attitude, and 15 questions for practices. Only one (correct, incorrect, and don’t know) answer was required for all questions. Depending on the median scores of each category, the score was leveled as ‘Good’ if the score was above the median score and as ‘poor’ if it was below the median score. The principal investigator and other research assistants were trained in data collection and in delivering health education for two weeks before the study commenced. Following training, pre-interventional data was collected by face-to-face interviews in Epicollect5 software from the study participants.

1. Interventional Phase

A multipronged health education was tailored to improve the knowledge about menstruation and to promote the best menstrual hygiene practices among adolescents. Health Education Intervention was a two-hour session that included interactive learning sessions using PowerPoint presentations, placards, posters, videos, and detailed handouts on menstruation and its hygiene practices. Extra emphasis was given to hygiene practices by demonstrating usage and safe disposal of napkins, and a glimpse of knowledge was also imparted on other absorbents like tampons and menstrual cups. Towards the end of the session, participants were grouped to discuss and dispel the myths and restrictions followed by them. This intervention plan was evaluated and validated by experts from gynecology and community medicine fields. Tamil translation was conceptualized by language experts.

2. Post-Interventional Phase

The impact of the health education intervention was assessed using the same preliminary questions in the pre-test questionnaire, after a period of three months from all the study participants.

Collected data were entered in Microsoft Excel (2010) and were analyzed using the Statistical Package for the Social Sciences (SPSS) software version 21.0. The test of normality (Kolmogorov–Smirnov test) was applied, and it was found to be non-normally distributed; hence median and range were used to describe the scores in all three domains both in pre-test and post-test. “Wilcoxon signed-rank test” was used to find the association between pre and post-test scores, and

the “Mann–Whitney U-” test was used to find the association between demographic and menorrhoeal variables with post-test scores. The *P* value less than 0.05 was considered to be statistically significant.

Results

A total of 250 adolescent girls were included in the study belonging with the mean age of 13.29 ± 1.5 years. Most of the girls belonged to the Hindu community [(181 (72.6%)). Based on the BG Prasad’s scale of socio-economic strata, the majority were in class 4 [94 (37.6%)] followed by class 3 [79 (31.6%)]. Mothers of most of the participants were housewives [112 (45%)] followed by laborers [100 (40%)], and the majority of them had the educational qualification of up to middle school [108 (43.5)], followed by high school [80 (32%)] and illiterate [37 (14.8%)]. Most of the fathers of the study subjects had a high school education [133 (53.2%)], followed by middle school [98 (37.2%)] and illiterate [31 (12.4%)]. In view of the menstrual characteristics, the mean age of menarche of the study participants was 13 ± 1.8 years. Out of 250 adolescent girls, 186 (74.4%) had a regular menstrual cycle, and 175 girls (70%) had the problem of pain during menstruation. Only 4 (1.6%) of them did not have sanitary toilets at their home. Only some respondents [58 (23.3%)] had obtained menstruation advice from their mothers before menarche.

The pre-test level of knowledge, attitude, and practices regarding menstruation and hygiene among the study subjects was 37.6%, 37.6%, 40.1%, respectively, which improved as 79%, 79.9%, and 76.9% after the health education intervention. Also, the overall score of all these domains improved from 48.7% to 71.3%, as shown in Figure 1. The median scores of all the domains and also the overall median score had significantly improved after the intervention (Wilcoxon signed-rank test *P* value < 0.05) as depicted in Table 1. The association of demographic and menstrual characteristics with the post-test score of the respondents was ascertained using the Mann-Whitney Utest. Practice domain scores were significantly associated with education status. Demographic factors such as age, mother’s education, and socio-economic status were found to be

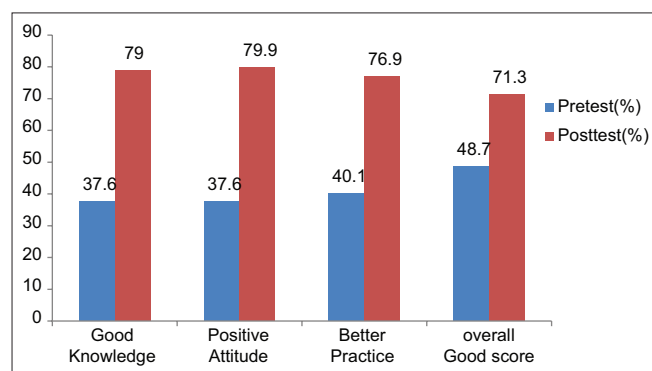


Figure 1: Depicting the Upsurge in proportion with better scores after intervention across all domains among participants

significantly associated with the post-test median scores of the overall score of the study participants as described in Table 2. Menstrual characteristics associated with post-test median scores were age at menarche, regular menstrual flow, absence of dysmenorrhea, and getting menstruation advice before menarche from mothers, as shown in Table 3.

Discussion

Every woman has a right to have a safe social and cultural environment to practice proper menstrual hygiene. This is not addressed properly to the community because menstrual hygiene management is not discussed even in general health agendas. While menstruation is a normal physiological process, girls need not restrict their day-to-day activities during their periods. It is the duty of their parents and teachers to advise those regarding menstrual changes even before menstruation so that they can be well prepared.

The present study demonstrated that the pre-test level of knowledge and attitude towards menstruation and hygiene shows that only 37% had good knowledge and positive attitude on the menstruation and hygiene practices, respectively. These findings were almost comparable with the cross-sectional studies conducted by Nilima Bhore *et al.*^[10] and Kamath R *et al.*,^[12] which showed the level of knowledge as 28% and 34%, respectively. This shows that menstruation is still a topic of taboo and silence in many parts of our country.

In the post-test, nearly 79% of our study subjects had good knowledge, and the present study also showed that there is a significant difference between the pre-test and post-test level of knowledge and attitude regarding menstrual hygiene at 0.05 level of significance, which clearly depicts that the given health education was effective to improve the level of knowledge of adolescent girls regarding menstruation and hygiene. The findings of this study were supported by a study carried out by Reem Bassiouny el-Lassy *et al.*,^[13] with almost 80% of change post intervention in all domains.

Table 1: Distribution of scores on knowledge, attitude, and practice domains (pre and post-test)

Scores	Median Scores	Percentiles		<i>P</i> (Wilcoxon signed-rank test)
		25 th	75 th	
Total Score on Knowledge				
Pre-test	3.00	2.00	4.00	0.0001
Post-test	5.00	5.00	6.00	
Total Score on Attitude				
Pre-test	3.00	2.00	4.00	0.0001
Post-test	5.00	4.00	5.00	
Total Score on Practice				
Pre-test	10.00	9.00	12.00	0.0001
Post-test	14.00	12.00	15.00	
Overall Scoring				
Pre-test	16.00	13.00	20.00	0.0001
Post-test	23.00	20.00	25.00	

Table 2: Association of demographic variables with post-test scores among adolescents

Demographic variables	Category	Post-test Knowledge Score (Median)	Post-test Attitude Score (Median)	Post-test Practice Score (Median)	Post-test Overall Score (Median)
Age (years)	≤13 years	5.00	4.00	13.00	21.00
	>14 years	6.00	4.00	14.00	24.00
	<i>P</i> *	0.103	0.000	0.000	0.000
Religion	Hindu	5.00	4.00	13.00	23.00
	Others	4.00	4.00	13.00	22.00
	<i>P</i> *	0.842	0.032	0.175	0.688
Father's Education	Up to middle school	5.00	4.00	13.00	22.00
	High school and above	5.00	4.00	13.00	22.00
	<i>P</i> *	0.947	0.063	0.704	0.515
Mother's Education	Up to middle school	4.00	3.00	13.00	22.00
	High school and above	5.00	4.00	14.00	23.00
	<i>P</i> *	0.208	0.000	0.250	0.005
Father's Occupation	Unemployed and unskilled	5.00	4.00	14.00	23.00
	Skilled and professionals	5.00	4.00	13.00	22.50
	<i>P</i> *	0.482	0.241	0.448	0.396
Mother's Occupation	Unemployed and unskilled	4.00	4.00	13.00	22.00
	Skilled and professionals	5.00	4.00	13.00	23.00
	<i>P</i> *	0.143	0.930	0.962	0.738
Socio-economic Status	Lower Class	4.00	3.00	11.00	20.00
	Upper Class	5.00	4.00	13.00	22.00
	<i>P</i> *	0.255	0.340	0.001	0.012

*Test of significance used is the "Mann-Whitney U-Test."

Table 3: Association of menorrhoeal characteristics with post-test scores among adolescents

Menorrhoeal Characteristics	Category	Post-test Knowledge Score (Median)	Post-test Attitude Score (Median)	Post-test Practice Score (Median)	Post-test Overall Score (Median)
Age at Menarche (years)	<12 years	4.00	4.00	12.00	21.50
	≥13 years	5.00	4.00	13.50	23.00
	<i>P</i> *	0.001	0.125	0.023	0.001
Menstruation Flow	Regular	5.00	4.00	13.50	23.00
	Irregular	4.50	3.50	12.00	20.50
	<i>P</i> *	0.338	0.220	0.002	0.001
Dysmenorrhoea	Present	4.50	4.00	13.00	22.00
	Absent	5.50	4.00	14.00	24.00
	<i>P</i> *	0.015	0.764	0.029	0.006
Sanitary Toilet at Home	Present	5.00	4.00	13.00	22.50
	Absent	5.00	4.00	14.00	23.50
	<i>P</i> *	0.935	0.982	0.307	0.425
Menstruation Advice before menarche	Yes	5.00	4.50	14.00	23.50
	No	4.50	3.50	12.50	21.00
	<i>P</i> *	0.033	0.000	0.000	0.000

*Test of significance used is the "Mann-Whitney U-Test."

The present study showed that the pre-test level of practice showed that only 2/5th (37.6%) of the participants had good practices related to menstrual hygiene. This result coincides with other studies conducted by Reem Bassiouny el-Lassy *et al.*, Christina Anu *et al.*, and Susila C *et al.*,^[13-15] which revealed poor practices of menstrual hygiene. Whereas in the post-test, nearly 77% had good practices related to menstrual hygiene, and there is a significant difference between the pre-test and post-test level of practice regarding menstrual physiology and hygiene, which implies that the conducted health education had a good impact on improving the level of practice among the girls of adolescent. This finding was supported by other

studies carried out by Reem Bassiouny el-Lassy *et al.*^[13] and Mahrajan S *et al.*,^[16] with almost 72% change in the best hygiene practices.

In the present study, the overall score on knowledge, attitude, and practices among the study subjects on menstrual hygiene also significantly improved after the health education from 48.7% to 71.3%. The present study revealed that demographic factors such as higher age, mothers with higher education, and the upper socio-economic class were found to be significantly associated with the improvement in the knowledge, attitude, and practices regarding menstrual hygiene. Thus, girls in a family

with higher parental education and high socio-economic status can easily be educated about menstrual hygiene and practices. These findings were in contrast to similar studies, which depicted no association between any of the above-mentioned factors with the domains of knowledge, attitude, and practices.^[16-19]

Our present study also demonstrates that improvement in the median scores of knowledge, attitude, and practice are more among the girls who attained menarche at late age, those with the absence of dysmenorrhea, and those who got the menstruation advice from mothers before the menarche. To the best of our knowledge, no other study depicted the relationship between menorrhoeal characteristics with post-test scores. Hence, this clearly replicates the importance of discussing menstruation and menstrual hygiene by the mothers and other primary caretakers so that the girl will be aware of the menstrual changes occurring and will be mentally prepared.

Conclusion

The present study has shown that there prevailed low level of knowledge, attitude, and practices regarding menstrual hygiene and various misconceptions among adolescent school girls regarding menstruation by doing pre-test. The health education intervention impacted the participant's improvement in knowledge, attitude, and practice regarding menstrual hygiene and its practices significantly. In view of the ill effects occurring due to improper menstrual hygiene and the existing misbeliefs in the community, there is a need for implementing better strategies to encourage adolescent girls to adopt safe and healthy practices. A planned and structured health education program should be addressed to adolescent girls both at the schools and in community settings. Before the implementation of health education among adolescent girls, it is essential to ensure that their mothers have the right knowledge and attitude about menstruation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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