Research Article

Impact of health education on menstrual hygiene: An intervention study among adolescent school girls

Iswarya Santhanakrishnan[1], Varshini Athipathy[2]

[1]Department of Community Medicine, Government Medical College and ESI Hospital, Coimbatore, Tamil Nadu, India, [2]PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu, India

Correspondence to: Iswarya Santhanakrishnan, E-mail: ishwarya3386@gmail.com

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ABSTRACT

Background: The term "menstruation"" creates a social stigma even today and this is due to misconceptions resulting in unfortunate health outcomes. Studies have proven that reproductive tract infections are due to poor menstrual hygiene. This can be corrected by providing proper health education to the adolescents. This study was planned to assess the effect of health education about menstrual hygiene to the adolescent girls. **Objectives:** The aim of this study is to assess knowledge and practices regarding menstruation among adolescent school girls and its improvement after health education. **Materials and Methods:** The interventional study was conducted from June to September 2016, at PSG Public Schools, Coimbatore. After obtaining informed consent, all the girls who have attained menarche and who were willing to participate were included in the study. Baseline data were collected using self-administered questionnaires. 1 week after baseline assessment, health education on menstrual hygiene was delivered using powerpoint and video presentations for duration of 1 h. Follow-up data were collected after 3 months using the same self-administered questionnaire. **Results:** The girls had improvement (91%) in knowledge regarding the cause for menstruation. The frequency of changing pads was significantly higher (86%) at the follow-up. A significant proportion of girls dried their undergarments in sunlight (82%) compared to (75%) at the baseline. Nearly 74% of the girls washed their hands with soap after changing the sanitary napkin compared to 41% before the intervention. There was a significant improvement in a number of students washing their genitals every time using the toilet (30% at baseline to 66% during follow-up). **Conclusion:** The health education program resulted in improvement of knowledge and menstrual hygiene practices among adolescent school girls. Thus, adding menstrual hygiene as part of the curriculum may break this culture of silence.

KEY WORDS: Menstrual Hygiene; Adolescence; Health Education

INTRODUCTION

Why is it that menstruation although a natural process "essential to the production of life", creates overwhelming fear and disgust among girls and women, even today? Well, it is a result of the worldwide "social stigma" psychologically proven to exist in all girls and women.[1] Menstruation marks important changes in a girls' life during the adolescent years. Adolescence, according to the world health organization is a critical period in human growth and development that occurs after childhood and before adulthood, from ages ten to nineteen.[2] Although menstruation is a natural process, its association with several misconceptions and practices, results in unfortunate health outcomes. Poor menstrual hygiene is a major determinant of morbidity and other complications in this age group.[3] Studies have reported reproductive tract infections, vaginal scabies infections, abnormal vaginal discharge in adolescent girls due to the lack of hygiene during menstruation.[4]

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India bears a powerful stigma referred to as the "culture of silence" or the "menstrual taboo" and accordingly, menstruation is rarely or sometimes never discussed at home and in schools. Girls, women, and even teachers are unaware of the above mentioned ill health effects due to "ignorance to learn about the physiologic process" of menstruation. Studies have shown that most adolescent girls have incomplete and inaccurate information about menstrual physiology and hygiene.[5,6] Infections due to lack of hygiene during menstruation has been reported in many studies.[7,8] Most girls are not informed about menarche or how to manage menstrual bleeding.

It would be appropriate to teach girls about hygienic menstrual practices. Doing so will definitely be beneficial to the girls and with this in mind, an interventional study was designed. Studies are going on and have assessed knowledge levels regarding menstrual hygiene practices. Although assessing knowledge levels are essential, it is equally important to offer a health education to the girls for the most benefit. Very few interventional studies were done in the state of Tamil Nadu. One interventional study was conducted in Chennai, by Anitha and Karuppiah.[9] The study was done at a government school among 500 adolescent girls. Study reported in terms of practices, the original mean score was 6.99 and after the intervention was 9.18. This exemplifies a significant improvement in knowledge and practices after health education. Giving a health education does in fact play a key role in girls' knowledge on menstrual health and sanitation. There is definitely a lacuna in interventional studies as there are fewer compared to the vast number of cross-sectional studies available. Hence, we planned this interventional study to assess the impact of health education on menstrual hygiene

MATERIALS AND METHODS

Study Design

Interventional study was conducted at PSG Public School, Peelamedu, and Coimbatore.

Study Participants

All the girls in 7–9 grades who attained menarche however students who were not willing to participate and students whose parents did not give consent for their children to participate in the study were excluded from the study.

Sample Size

Considering improvement in menstrual hygiene by 15%, sample size.

Calculated using open Epi 3.03a version is 166 girls. With non-response rate of 20% of the calculated sample size is 200.

Data Collection

An intervention study was conducted to find out the effectiveness of health education in improving knowledge and hygienic practices followed during menstruation among adolescent school girls. After obtaining Institutional Ethical Committee clearance, informed consent was obtained from students and their parents. All the girls who have attained menarche and who were willing to participate were included. Baseline data were collected using self-administered questionnaires. The questionnaire included general demographic details, questions for assessing knowledge (cause for menstruation, origin of menstrual blood, frequency and duration of menstrual periods, awareness of menopause) and questions pertaining to practices during menstruation (absorbent used for menstruation, frequency of changing sanitary napkin, sun drying of undergarments, cleaning of external genitals and material used for cleaning the external genitalia). 1 week after baseline assessment, health education was delivered in five sessions (forty students per session) using power point and video presentations for a duration of 1 h. The study participants were educated regarding the physiology of menstruation and menstrual hygiene. In particular, the cause of menstruation, importance of using sanitary pads, proper hand washing, bathing, washing and drying the undergarments under the sun, proper genital area washing and methods to relieve pain during menstruation. Follow-up data were collected after 3 months using the same self-administered questionnaire.

Data Analysis and Interpretation

Data were entered into Excel and analyzed using SPSS software version 17. Pre- and post-intervention data were compared using Chi-square test for proportions. Level of significance was considered with a $P < 0.05$.

RESULTS

The study took place at PSG Public School, Coimbatore among 200 girls who reached menarche, from standards seven through nine. Demographically [Table 1], more than half the girls were 13 or 14 years of age. The rest of the students (46%) were 11 or 12 years old. More than three-fourths of the population (84.5%) was Hindus; the minority was Muslims, and few Christians. The majority (96%) of students' parents were Graduates.

After analyzing pre-intervention and post-intervention assessment responses, proportions and *P* values for significance were calculated and tabulated [Tables 2 and 3]. Knowledge and practices were analyzed separately. Few (39%) of the students knew about menstruation before menarche, and 86% of the girls first came to know about the menstrual process from their mother.

Regarding knowledge, about 63% of the students thought that menstruation was a good process originally, and this

Table 1: Demographic characteristics of study participants

Characteristic	*n* (%)
Age in years	
11–12	92 (46)
13–14	104 (52)
>15	4 (2)
Religion	
Hindu	169 (84.5)
Muslim	26 (13)
Christian	5 (2.5)
Education of mother	
Secondary	4 (2)
Higher secondary	3 (1.5)
Graduates	193 (96.5)

rose to 91% after the intervention [Table 2]. This was considered as a significant increase in responses from the baseline as the $P < 0.001$. Regarding what the students thought about the social misnomer that menstrual blood is impure blood, only 31.5% disagreed and after the teaching, almost 3–4 (73.5%) disagreed, and this was again considered as significant improvement with a $P < 0.001$. Regarding the cause of menstruation, about 88% knew that it was due to physiological reasons and this was increased to 94.5% post education, with a $P = 0.04$, which is significant. Most students knew the organ responsible for menstruation as the uterus. The pre-test was 92.5% and post-test was 96.5%, with a $P = 0.06$ which is not significant. Not many understood the idea that menstruation is an indicator of fertility as only 11% correctly chose yes during the baseline and this increased to 51.5% after the intervention, with a significant $P < 0.001$.

Most of the girls, 93%, correctly knew the frequency of menstruation as once a month before the intervention, and post-teaching was 96% with an insignificant $P = 0.18$. Girls were aware that the normal duration of a menstrual period lasts for more than 3 days. Pre-intervention was 93.5% which was 96.5% post-intervention, with an insignificant $P = 0.14$. Regarding knowledge about menopause, less than half, 42.5% were aware of menopause, and this number increased to 71.5% after the health education with a $P < 0.001$, which is statistically significant.

Regarding hygienic practices, all the 200 students (100%) use sanitary napkins. Thus, there was no change in answers after the teaching [Table 3].Originally, many students, 61.5% believed, quite wrongly, that the sanitary napkin should be changed 2–3 times a day. After the teaching, 86% of the girls understood that changing sanitary napkins more than 4 times a day is essential and the improvement was significant with a $P < 0.001$. About three-fourths of the girls, 73%, originally sun-dried their inner garments, and after the intervention, the number rose to 82.5%, with a significant $P = 0.01$. Only about 41.5% washed their hands with soap and water before the education, and this increased to 74.5%, with a significant $P < 0.001$. Originally, only 30.5% of the students practiced washing their genitals every time while using the toilet and this improved to 66% after the teaching with a significant $P < 0.001$. Finally, when the students were questioned about how they washed their genitals, 7%, used just soap and water, at the baseline, and this slightly increased to 10.5% after the teaching with a $P = 0.16$, being statistically insignificant. Among girls, 52% thought that they had enough knowledge about menstruation, and this significantly increased to 76% after the intervention.

DISCUSSION

The girls included in the current study have all reached menarche. Thus, most of them had some basic knowledge about menstruation. Given that their mothers were the major source of learning about menstruation and that their families were well educated with graduate degrees. In the current study, 52% of girls were in 13–14 years of age and 46% in 11–12 years. The majority (69%) of girls considered menstrual blood as impure however in follow-up, significant proportion (73%) mentioned menstrual blood as not impure. At follow-up, adolescent girls had significant improvement in knowledge regarding the cause for menstruation (91%), menstruation as an indication of fertility (51%), and were aware about menopause (71%). Majority of students knew about the origin of menstrual blood, duration, and frequency of menstrual periods (96%, 93% and 93%) at the baseline assessment. All the 200 participants (100%) used sanitary napkin as absorbents. The frequency of changing pads was significantly higher at the follow-up (86%) compared to the baseline. A significant proportion of girls dried their undergarments in sunlight at follow-up (82%) compared to (75%) at the baseline. At the follow-up, a significant proportion (74%) of adolescent girls washed their hands with soap after changing the sanitary napkin compared to (41%) at the baseline. There was a significant improvement in number of students washing their genitals every time using the toilet (30% at baseline to 66% during follow-up).

When questioned about menstrual blood being impure and the origin of menstrual blood, in the current study, 31.5% and 92.5%, respectively, correctly answered initially which increased to 73.5% and 96.5% (respectively) in the post-intervention. In a study conducted at a rural area in Haryana by Arora *et al*. however, the baseline was 1.5% and 5%, respectively which later increased to 9% and 97%, respectively. The current study had a much better baseline score. This was due to the low socioeconomic class, and education level of the families as the study in Haryana was conducted in a rural area.[4] A study conducted in Andhra Pradesh only 24.5% students were about menstruation before menarche.[10] In the present study, 88% of the girls initially knew the correct cause of menstruation, and this increased to 94.5% after

Table 2: Impact of health education on knowledge regarding menstruation (*n*=200)

Variable	Pre-test (%)	Post-test (%)	*P* value
Is menstruation a good thing			
Yes	126 (63)	182 (91)	<0.001
No	74 (37)	18 (9)	
Is menstrual blood impure			
Yes	137 (68.5)	53 (26.5)	<0.001
No	63 (31.5)	147 (73.5)	
Cause for menstruation			
Physiological	176 (88)	189 (94.5)	0.04
Don't know	24 (12)	11 (5.5)	
Origin of menstrual blood			
Uterus	185 (92.5)	193 (96.5)	0.06
Don't know/others	15 (7.5)	7 (3.5)	
Is menstruation an indication of fertility			
Yes	22 (11)	103 (51.5)	<0.001
No	178 (89)	97 (48.5)	
Frequency of menstrual period			
Once a month	186 (93)	192 (96)	0.18
Once in 2 months	14 (7)	8 (4)	
Normal duration of menstrual period			
<3 days	13 (6.5)	7 (3.5)	0.14
≥3 days	187 (93.5)	193 (96.5)	
Awareness of menopause			
Yes	85 (42.5)	143 (71.5)	<0.001
No	115 (57.5)	57 (28.5)	

Table 3: Impact of health education on menstrual hygiene practices *(n*=200)

Variable	Pre-test (%)	Post-test (%)	*P* value
Absorbent used during menstruation			
Sanitary pad	200 (100)	200 (100)	NA
Cloth	-	-	
Frequency of changing sanitary pad			
2–3 times a day	123 (61.5)	28 (14)	<0.001
≥4 times a day	77 (38.5)	172 (86)	
Sundry your undergarments			
Yes	146 (73)	165 (82.5)	0.01
No	54 (27)	35 (17.5)	
Washing hand with soap after changing sanitary napkin			
Yes	83 (41.5)	149 (74.5)	<0.001
No	117 (58.5)	51 (25.5)	
Material used for cleaning genitals			
Only water	186 (93)	179 (89.5)	0.16
Soap and water	14 (7)	21 (10.5)	
Cleaning of genitals			
Every time using toilet	61 (30.5)	132 (66)	<0.001
During bathing	139 (69.5)	68 (34)	

intervention. There were similar findings in a study by Haque *et al.*[10] conducted in an urban area in Bangladesh. In that study, the baseline was 5% and this increased to 97%. As the study was also done in an urban area similar to the

current study, the results were similar.[11] In the present study, menstruation as an indicator of fertility was poorly understood by the students during baseline (11%), and significantly improved to 51.5%. The health education was very effective in teaching this particular concept as this yielded a large difference between pre-test and post-test. 40.5% of the students improved their responses after teaching. Majority of the students knew about the frequency of menstruation even before the teaching and thus, after the health education, the responses barely improved (from 93% to 96%) with an insignificant $P = 0.18$. The reason for this could be that the girls have already reached menarche, and hence, they can easily reason from their own experience that menstruation occurs once a month. Only 42.5% were aware of menopause at baseline, and the teaching improved their knowledge as 71.5% were aware during post-test. In the present study, 100% used sanitary pads. In the study by Arora[4] conducted in a rural part of Haryana, the baseline was 35% which increased to 55% post-intervention. The baseline values are much lower than the present study as the socioeconomic status is lower. When questioned about sun drying inners, 73% practiced this initially, and during post-intervention, this increased to 82.5%. A study conducted in Uttarakhand by Singh *et al.*[12] only 36.3% practiced sun drying. The girls dried their inners in the corner of their houses as they felt shy and uncomfortable because they did not want others to see. In fact, they left their inners in a particular place until their next period. The same study in Uttarakhand by Singh *et al*.[12] reported that only 17.1% changed their pads more than 4 times per day. The present study showed significant improvement in practice from 38.5% changing napkins more than 4 times a day to 86% changing more than 4 times a day. Similarly, in Arora's study, at baseline, 60% changed their napkins twice a day, and after the education, 72% understood to change their napkins 3–4 times a day.

In the present study, 66% of the girls practiced proper hand washing with soap and water when using the toilet during menstruation. In a study by Yasmin *et al*.[13] conducted in West Bengal, 83.7% followed this practice. The study from West Bengal yielded higher results because it is an urban area and the ages of the girls were much higher ranging from 13 to 18 years. Thus, the girls would definitely be more informed on this practice. Overall, the students felt that they gained useful knowledge from these sessions. To assess this, the students were asked if they felt they had enough knowledge about menstruation. At baseline, only 52% responded yes and after the session, it increased to 76% suggesting a benefit to the students.

Strength and Limitations

Health education delivered by a well-trained person using structured material along with video, followed by discussions on some of the concerns that the girls had regarding their menstrual cycles. Health education imparted to adolescent girls resulted in improved knowledge and hygienic practices during menstruation.

One limitation of this study is change in practice was assessed using self-administered questionnaire; hence, the possibility of social desirability bias could not be eliminated.

CONCLUSION

The present study has revealed that it is practically feasible to implement a health education programme about menstrual hygiene in schools. A health education program resulted in significant improvement in knowledge and menstrual hygiene practices among adolescent school girls. In our study, the majority of girls were not aware of menstruation before menarche. Hence, it is important to implement a structured education program regarding menstruation for early adolescents. Information on menstruation and menstrual hygiene should be included in the curriculum which, in turn, will improve the discussion between students and teachers and break this culture of silence.

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