

Impact of Health Education Intervention on Knowledge and Practice about Menstruation among Female Secondary School Students in Zagazig City

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Abstract: Introduction: The onset of menstruation is part of the maturation process. It is part of the female reproductive cycle that starts when girls become sexually mature at the time of puberty. Menstruation and menstrual practices are still clouded by taboos and socio-cultural restrictions resulting in adolescent girls remaining ignorant of the scientific facts and hygienic health practices, which sometimes result into adverse health outcomes. The aim: This study aimed to improve the impact knowledge level and practices after health education on “menstruation and healthy menstrual practices” among female secondary school students in Zagazig city Research design: A quasi-experimental design was used in the intervention phase of the study to evaluate the impact of health education intervention about menstrual knowledge and hygiene among female secondary school students in Zagazig city. Setting: The study was conducted in one governorate and one private female secondary school in Zagazig city. Subjects: The study comprised of 150 students was chosen from the above mentioned setting. Methods data were collected by using a structure interview questionnaire sheet which covers all items related to menstrual knowledge and hygiene among female secondary school students in Zagazig city. Results: There was a significant improvement in girl’s knowledge about nearly all menstruation relevant items in pre-test compared to post-test. In the pre-test period, only 65 (43.33%) girls reported that they wash their genitalia with soap and water whenever they change their cloths/sanitary pads whereas in the post-test period, significant improvement was observed in their menstrual practice ($p < 0.01$). Conclusion The present study had revealed unhealthy menstrual practices, low level of knowledge and various misconceptions among adolescent school girls regarding menstruation. The study also clearly pointed out the impact of health education in improving their knowledge and practice. Recommendation: School education program should be imparted to the students. Further, emphasis also needs to be given through workshops and seminars on “Adolescent Reproductive Health”.-

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1. Introduction:

Menstruation is a natural phenomenon among mature females who experience shedding of blood for 1-7 days every month from the age of maturity until menopause (Abera, 2003). Menstruation, the periodic vaginal bleeding that occurs with the shedding of the uterine mucosa is one of the signs of puberty, and occurs one or two years following appearance of secondary sexual characteristics (Oyebola, 2002). A woman’s period may not be the same every month and it may not be the same as that of other women. Periods can be light, moderate or heavy and the length of the period also varies (The National Women’s Health Information Center, 2009). On the other hand, hygiene-related practices during menstruation are of considerable importance for reproductive health. If poorly managed, menstrual period may be accompanied by discomfort, reproductive tract infection, smelling and embarrassment among others (Dasgupta & Sarkar, 2008).

Unhygienic menstrual practices may affect their health such as increased vulnerability to RTIs (Reproductive Tract Infections) and PID’s (Pelvic Inflammatory Diseases) and other complications. Menstrual hygiene deals with the special health care needs and requirements of women during monthly menstruation or menstrual cycle. These areas of special concern include choice of the best “period protection” or feminine hygiene products; how often and when to change the feminine hygiene products; bathing care of the vulva and vagina as well as the supposed benefits of vaginal douching at the end of each menstrual period. Provisions for good menstrual hygiene include home-made remedies like pieces of cotton cloth which are either placed on a woman’s undergarment or on a home-made belt that wraps around the waist. These cloths can be washed, dried and used again (John Hopkins, 2008). Available commercial products for women’s hygiene during menstruation include pads, tampons and cups (Paul, 2007).

Health education is defined as any combination of learning experiences designed to predispose, enable and reinforce voluntary adaptation of individual behavior conducive to healthy habits. Its goal is improving knowledge and attitude of individual to develop health behavior (WHO, 2003). So the girls should be educated about the significance of menstruation and development of secondary sexual characteristics, selection of a sanitary menstrual absorbent and its proper disposal. There is a need for health education on menstrual hygiene so that they can discuss freely about it without hesitation (ADhikari et al, 2007).

Significance of the study:

Majority of adolescent female usually have lack of scientific knowledge and hygienic practice during menstruation and puberty, also Adolescent girls often are reluctant to discuss this embracing topic with their parents and often hesitate to seek help regarding the menstrual problem from external sources. So, girls should be educated about "menstruation and healthy menstrual practices" through expanded programme of health education in schools. Data on their level of knowledge and practices are beneficial for planning programmes for improving their awareness level.

Aims of the study

The aim of this study is to improve the impact knowledge level and practices after health education on "menstruation and healthy menstrual practices" among adolescent school girls through:

- 1- Assessing the level of knowledge and practice regarding menstrual hygiene among female secondary school students.
- 2- Planning, implementing and evaluating the impact of health education intervention about menstrual hygiene among the same group.

Research hypotheses:

It is hypothesized that health education intervention will improve the knowledge and practice regarding menstrual hygiene among female secondary school students.

2. Subjects and Methods:

Research design:

A quasi-experimental design was used in the intervention phase of the study to evaluate the impact of health education intervention about menstrual hygiene among female secondary school students in Zagazig city.

Study setting

The study was conducted in one governorate female secondary school and one private female secondary school. Three governorate school which have five classes and 45 students, while two private schools which have three classes and 30 female students. The two schools were randomly selected at Zagazig city.

Administrative design

A written letter used from the Faculty of Nursing, Zagazig University was directed to the school Director to get approval for collection the data

Sample size

The sample size was calculated through EPI info (Epidemiological information system) soft ware version 6 according to the following collected data, the risk prevalence ratio was 2:1 (Dean et al., 2010) at confidence level 95% and a power of study 80%. The estimated sample size was calculated to be 150 female students.

Study subjects

The study comprised of 150 students was chosen from the above mentioned setting. The number of the study population (150) was determined according to the following procedure:-

Procedure

Multistage random sampling design was conducted. Secondary schools for girls were classified into governmental and private. Two secondary schools were randomly selected. One secondary school governorate was Elhoria secondary school and one private secondary school was Elsherif secondary school. Then one grade was chosen randomly from each secondary two school. The ratio between students' numbers in governorate school and private school was calculating 2:1, 100 students from governorate school to 50 students from private school.

Ethical approval

The agreement for participation of the subjects was taken after fully explanation the aim of the study to get their approval for participation in the study. Also, they were assured that the information would be confidential and used for the research purposed only.

Tools of data collection:

The tool for data collection was a structured intervention questionnaire sheet composed of three parts. **The first part** was developed by the researcher to collect data related to socioeconomic

characteristic that includes question about educational level of parents, occupation, residence, family size, income, and social class: Social class was modified according to the model of **Fahmy and El-Sherbini (1983)** The total score was (22) degree the students considered having a low social class if the score is less than 11, moderate social class if the score is less than 22, and high if the score is 22. **The second Part** aimed to collect data regarding girls knowledge about menstruation terminology used for menstruation, prior information level about menstruation and its related premenstrual psychological complications, it includes 13 questions. Also, asked about source of information about menstruation. **Third Part** was developed to assess of practices followed menstruation and the level of personal hygiene during the menstrual cycle It includes 11 questions. Scores were used to evaluate participant's knowledge of Hygienic and protective practices during menstruation. Questions were scored as followed 1 marks for correct answer and 0 marks for wrong or no answer. Summation of all questions including knowledge (13 marks), regarding practice (11 marks) and then cut acquired into two groups as follow:

1) The total score of each aspect equal 60% or more than → adequate or satisfactory knowledge and practice

2) The total of each aspect less than 60% → inadequate or unsatisfactory knowledge and practice

Pilot study

It was carried out on 10 students to ascertain the clarity and applicability of the tools. Those girls who shared in the pilot study were excluded from the main study sample. Data were collected by using a structured interview questionnaire.

Field work

The study was conducted during the period July-December 2010. After taking permission from the school authority, a pre-designed, pre-tested, structured questionnaire was administered to the school girls to study their existing level of knowledge and practices regarding menstruation. The questionnaire included topics concerning menstruation, source of information, menstrual hygiene. After collection of the questionnaire, health education regarding "menstruation and healthy menstrual practices" was imparted to the girls through lectures with the help of audio-visual aids. This was followed by question-answer session to clarify their doubts. the total sample was classified into 6 groups each group ranged from 20-25

students, and each group obtained 4 sessions through 2 weeks, each session ranged from 30-45 minutes, **first session** include, pretest and information about menstruation cycle e.g. definition, causes, frequency, regularity, cause of delay of menses, and length of menstrual cycle. **Second session**, include knowledge about source of information, premenstrual pain, psychological state, impact of menstruation on relation with other and activities with her family. **Third session**, include knowledge about type of diet, number of meal, type of fluid intake and exercise. **Fourth session** include practice of menstrual hygiene, perineal care, bathing during menstruation, material of pads used, number/day, disposable of pads and clothes. After three months, the same questionnaire was again administered to the students (post-test) to assess the impact of health education.

Validity and reliability

The questionnaire was translated into Arabic, and then reviewed by 5 experts (3 experts from community health nursing and 2 experts from obstetrics and Gynecology nursing) who conducted face and content validity of all item. All recommended modifications were performed. Degree of reliability alpha precision 88% of the study sample.

Statistical design

The data were revised, coded tabulated and analyzed using Epi info version 6.1 program. McNemar chi-square test was used to test the significance of change of these paired data. Significance ($P < 0.05$).

3. Results

Table (1) demonstrates soci-demographic characteristics of the studied subjects. The table showed that the mean age of the girls was 15.813 ± 0.469 years. Also most of girls reported that their parents have secondary and higher education. Also nearly two third (59.33%) girls reported their mother's housewife. However, more than half (54.0%) girls their fathers were unskilled. While (51.33%) girls have not enough income. Also, (59.33%) of girls belonged to low social class.

Table (2) displays frequency distribution of menstrual pattern of studied female group. All studied female are menstruating. Only 16.0% of girls reported that they had their menarche before the age of 13 years while the remaining 84.0% had their menstruation after their 13th birthday. As the reaction to the first menstruation, half of the girls (50.7%) felt fear from first menstruation, about 37.3% felt anxiety while 6.7% developed syncope.

Also, the inter-menstrual interval was normally in 51.3% girls from 21-35 days. Meanwhile, nearly fourth (27.4% and 21.3%) girls had longer or shorter interval >35 days or <21 days respectively. As duration of menstrual flow, the majority (90.7%) of girls had menstrual flow from 3-6 days, whereas 6.7% of them less than 3 days, 2.6% of them had menstrual flow from 7-12 days. Fifty four percent of girls reported normal bleeding during their menstruation, 27.3% girls have scanty bleeding while only 18.0% reported excessive bleeding during their menstruation. On the other hand, in the pretest almost one third (31.4%) girls correctly reported the uterus as the organ from where blood comes, more than one tenth (13.3%) girls reported the urethra while, 5.3% and 19.3% girls reported fallopian tube and vagina respectively. Lastly, 30.7% says I don't know. Following health education, the majority (98.7%) girls correctly reported uterus as the organ from where menstrual blood comes.

Table (3) illustrates the knowledge regarding menstruation among adolescent school girls. In pre-test phase, the majority (80.0%) girls define the menstruation as normal physiological process and there was no statistically significant difference in post-test. As shown in the table, a significant improvement in girls knowledge about nearly all menstruation relevant items in pre-test compared to post-test.

Table (4) showed the menstrual practices and various restrictions adopted by the girls during menstruation. In the pre-test phase, 66 (44.0%) girls reported that they didn't do any house hold activities during menses. In the post-test phase, no significant difference was seen with regard to the restrictions followed by it ($p>0.05$). In the pre-test period, only 65 (43.33%) girls reported that they wash their genitalia with soap and water whenever they change their cloths/sanitary pads whereas in the post-test period, significant improvement was observed in their menstrual practice ($p<0.01$). Out of the 150 girls, 36 (24.0%) girls used only cloths during menstruation, 48 (32.0%) used only sanitary pads while 66 (44.0%) girls used both sanitary pads and cloths during menses.

Data given in the **table (5)** showed the practices during menstruation among girls using cloths ($n=117$). In the pre-test period, the type of cloths used was reported as cotton 66 (64.70%), and nylon 36 (35.29%) which increased to 94 (92.15%) girls using cotton in post-test period. During the pre-test phase, 54 (52.94%) girls washed their cloths only with water and 48 (47.05%) washed with soap and water. In the post-test period, the figures rose with 89 (87.25%) girls washing their cloths with

soap and water. For drying the cloths, in the pre-test period, only 6 (5.88%) girls sun dried their cloths which increased to 31 (30.39%) in the post-test phase. With regard to the final disposal off the used cloths, in the pre-test period, 11 (10.78%) girls burnt it, 54 (52.94) girls threw it in the dustbin, 3 (2.94%) girls buried it and 34 (33.33%) girls threw it by the roads. In the post-test period, 73 (71.56%) girls reported that they threw the used cloths in the dustbin.

Table (6) demonstrate the practices during menstruation among girls using sanitary pads ($n=114$). Out of the 114 girls using sanitary pads during menstruation, 47 (41.22%) girls reported that they changed the pads only twice a day during the pre-test period while reduced to 12 (10.52%) in the post-test phase. 107 (93.85%) girls disposed off the sanitary pads in the house-dustbin while 6 (5.26%) and 1(0.87%) girls disposed it off by the roadside and latrine respectively.

The source of information about menstruation was shown in **Figure (1)**. More than two third (64.0%) girls reported that their mother was the main source of information about menstruation followed by friends (16.0%), sisters (11.3%), relatives (4.7%), teacher (2.7%) and finally TV (1.3%).

Figure (2 and 3) summarizes the total score of girl's knowledge and practice regarding menstruation. The majority (88.7% and 79.3% respectively) girls had higher percentage of satisfactory knowledge and practice regarding menstruation at the post-test than the pre-test (32.0% and 48.7 respectively). The difference observed was statistically significant (p -value <0.001).

4. Discussion

Menstruation is a normal physiology in females. Poor hygiene during menstruation has been associated with serious ill-health ranging from reproductive tract infection, urinary tract infection. Females are generally expected to exercise good hygienic practices during menstruation to prevent themselves from these problems. However, the females especially the adolescents are prepared psychologically to develop the associated power and mastery over the physiological changes that occur during this period. They should have sufficient knowledge surrounding menstruation, menstrual cycle and of menstrual hygiene even before they attain menarche (**Dasgupta & Sarkar, 2008**).

The findings of the present study revealed that the age of menstruating girls ranged from 14 to 17 years with maximum number of girls between 14 and 15 years of age. Similar study conducted by

Table (1) Frequency distribution of socio-demographic characteristic of the studied group (n=150)

Characteristics	No	%
Residence		
Rural	63	42.00
urban	87	58.00
Mother Education		
Illiterate, read & write	46	30.67
Preparatory	18	12.00
Secondary	43	28.00
High	43	28.00
Father Education		
Illiterate, read & write	15	10.00
Preparatory	19	12.67
Secondary	48	32.00
High	68	45.33
Mother Occupation		
Working	61	40.67
Housewife	89	59.33
Father Occupation		
Unskilled	81	54.00
Skilled	24	16.00
Semi profession	16	10.67
profession	29	19.33
Family income		
Not enough	31	20.67
Enough	42	28.00
Enough & more	77	51.33
Crowding index		
Low	49	32.67
Middle	89	59.33
High	12	8.00
Family income		
Not enough	77	51.33
Enough	42	28.00
Enough & more	31	20.67
Social class		
Low	89	59.33
Middle	49	32.67
High	12	8.00

Table (2) Frequency distribution of menstrual pattern of studied group (n=150)

Menstrual pattern	No	%
Age of menarche		
10-<13	24	16.00
13-15	126	84.00
Reaction of the first menstruation		
Fear	76	50.67
Anxiety	56	37.33
Syncope	10	6.67
others	8	5.33
Inter-menstrual interval		
< 21 days	32	21.33
21-35 days	77	51.33
> 35 days	41	27.33
Duration of menstrual flow		
<3 days	10	6.67
3-7 days	136	90.67
7-12 days	4	2.66
Amount of menstruation		
Normal	82	54.67
Scantly	41	27.33
excessive	27	18.00
The organ from where blood comes		
Uterus	47	31.33
Urethra	20	13.33
Fallopian tube	8	5.33
Vagina	29	19.33

Table (3) Impact of health education intervention on correct menstrual knowledge among the studied group (n = 150)

Knowledge	Pre-test		Post-test		P value
	No	%	No	%	
1. The definition of menstruation	120	80.00	122	81.33	0.50
2. The causes of menses	118	78.67	135	90.00	0.000*
3. The regularity of menses	81	54.00	127	84.67	0.000*
4. The cause of delay of menses	39	26.00	129	86.00	0.000*
5. The frequency of menses	113	75.33	130	86.67	0.000*
6. The natural of menstrual blood	85	56.67	115	76.67	0.000*
7. The length of cycle	81	54.00	137	91.33	0.000*
8. The premenstrual problems	49	32.67	125	83.33	0.000*
9. Start of premenstrual pain	98	65.33	125	83.33	0.000*
10. The impact of menses on relation to others	59	39.33	96	64.00	0.000*
11. The psychological impact of menses	41	27.33	119	79.33	0.000*

Mc-Nemar test was the test of significant used

Table (4) Impact of health education intervention on correct menstrual practice among the studied group (n = 150)

Practices during menstruation	Pre-test		Post-test		P value
	No	%	No	%	
1. Do you do house hold activities during menstruation?	84	56.00	88	44.00	0.12
2. Do you bath daily during menses?	34	22.67	145	96.67	0.000*
3. Do you wash genitalia with soap and water where ever you change cloth or sanitary pad?	65	43.33	146	97.33	0.000*
4. Do you take balance diet during menses?	41	27.33	139	92.67	0.000*
5. Do you do exercise during menses?	6	4.00	83	55.33	0.000*

Mc-Nemar test was the test of significant used

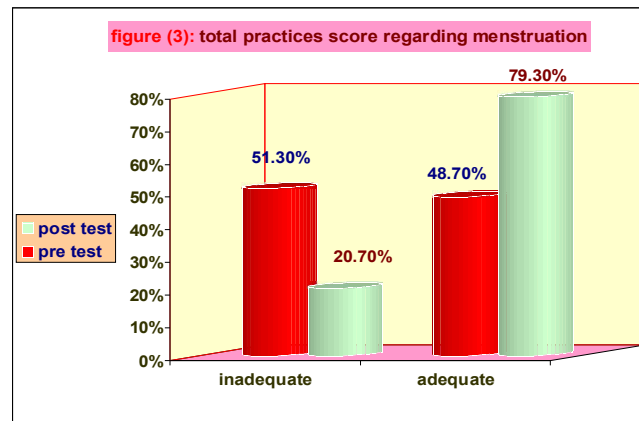
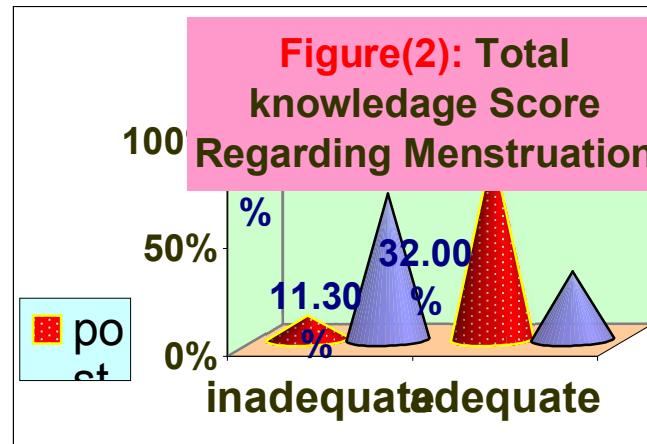
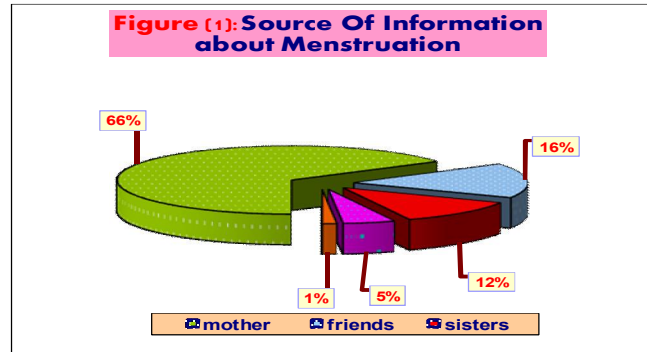
Table (5) practice of menstrual hygiene in adolescent girls using cloth (n=102)

Practice of menstrual hygiene using cloth	Pre-test		Post-test		P value
	No	%	No	%	
1. Type of cloths used					0.000*
Nylon	36	35.29	8	7.84	
Cotton	66	64.70	94	92.15	
2. How often do you change clothes in a day?					0.000*
Two times a day	28	27.45	4	3.92	
Three times a day	43	42.15	34	33.33	
Four times a day	22	21.56	46	45.09	
Five times a day	9	8.82	18	17.64	
3. How do you wash your clothes?					0.000*
Soap and water	48	47.05	89	87.25	
Only water	54	52.94	13	12.74	
4. Where do you dry the cloth?					0.000*
House-corner	96	94.11	71	69.60	
Sundry	6	5.88	31	30.39	
5. How do you dispose of the used clothes?					0.000*
Burn the cloth	11	10.78	5	4.90	
Throw in dustbin	54	52.94	73	71.56	
Burry the cloth	3	2.94	1	0.98	
Throw on roads	34	33.33	23	22.54	

Table (6) practice of menstrual hygiene by girls using sanitary pad (n=114)

sanitary pad	Pre-test		Post-test		P value
	No	%	No	%	
1. How often do you change pads a day?					0.000*
Two times a day	47	41.22	12	10.52	
Three times a day	43	37.71	55	48.24	
Four times a day	15	13.15	38	33.33	
Five times a day	9	7.89	9	7.89	
2. In what do you wrap the pads while disposing of?					0.06
Paper	60	52.63	65	57.01	
Plastic	54	47.36	49	42.98	
3. How do you dispose of the sanitary pads?					0.008@
House-dustbin	107	93.85	113	99.12	
Road-side	6	5.26	1	0.87	
Latrine	1	0.87	0	0	

@ wilcoxon signed rank test



Deo & Ghattargi (2005) and **Khanna et al, (2005)** reported that the age of menstruating girls ranged from 12 to 17 years with maximum number of girls between 13 and 15 years of age, with the mean age of menarche of the respondents was 12.8 years, and 13.2 years respectively.

The current study revealed that nearly 60% percent of the girls were low social class. Similar study conducted by **Bourne and Rhule (2009)** It is evident from our observations that, use of unsanitary and sub-standard menstrual absorbents was common

among girls from low socio economic status. Therefore undoubtedly poverty and low social class play a major role on the choices of absorbents leading to the use of unsanitary materials. It is likely that a poor financial resource has contributed to the use of 'multiple material' as menstrual absorbents:)

As regards the reaction to the first menstruation, half of the girls felt fear from first menstruation, and the remaining felt anxiety and syncope. This study agreement with **Tang et al, (2003)** founding the similar results in which

participant's emotional reactions to menarche were largely negative, with almost 85% reporting feeling annoyed and embarrassed. Also **Farhana et al, (2010)** who reported that the emotional response at menarche, most of the participants 266 (53.2%) shared the feelings of being embarrassed.

According to the current study results, more than half girls had the inter-menstrual interval was from 21-35 days. Meanwhile, the remaining girls had longer or shorter interval >35 days or <21 days respectively. The figures point out that though majority of girls had normal menstrual cycle, some of them had their periods with longer than usual gaps. This could be attributed to some medical reasons, which need further investigation. This result coincided with **Dipali et al (2009)** who stressed that the inter-menstrual interval was reported to be 28-30 days by 83 (42.13%) girls whereas it was 31-45 days for 41 (20.81%) girls and 46-60 days for 46 (23.36%) girls. This could be attributed to changing trends in lifestyle, dietary habit, stress, hormonal imbalance or some medical reasons which requires gynecological assessment at the earliest. On the same line, **Rajni et al (2009)** emphasized that among Tribal Gujjar adolescent girls, only (9.9%) of the subjects had their menstrual cycle between 45-60 days which is much lower than the figure in the present study.

As regards duration of menstrual flow, the majority girls had menstrual flow from 3-6 days, whereas 6.7% of them <3 days, 2.6% of them had menstrual flow from 7-12 days. Slightly fifty four percents of girls reported normal bleeding during their menstruation, 27.3% girls have scanty bleeding while only 18.0% reported excessive bleeding during their menstruation. In the same line with the current results, **Rajni et al (2009)** pointed to that out of total 131 subjects who were having menstruation, 103 (78.6%) subjects reported their duration of menstruation between 0 to 6 days while rest of them i.e. 28 (21.3%) reported their duration between 7 to 12 days. Also 59 (45.0%) subjects reported normal bleeding during their menstruation, 37 (28.2%) subjects reported scanty bleeding and 35 (26.7%) reported It was hence observed that these girls (26.7%) had excessive blood loss, which could be responsible for anemic conditions observed in the group.

In the present study, one third girls correctly reported uterus as the organ from where blood comes, more than one tenth girls reported urethra while, 5.3% and 19.3% girls reported fallopian tube and vagina respectively. Lastly, 30.7% says I don't know. Following health education, the majority girls correctly reported uterus as the organ from where menstrual blood

comes. These findings were incongruent with **Singh and Maya (2006)** who stated that among adolescent girls of Varanasi district (UP), 43.5 percent of the girls' correctly responded uterus as the organ from where the menstrual blood comes. Also, in the study conducted by **Adhikari et al (2007)** among the rural adolescent girls of Nepal, 25.3 percent of the girls reported uterus as the organ from where the bleeding comes whereas 32 percent, 26.7 percent and 16 percent said the fallopian tube, vagina and urinary bladder respectively from where the menstruation blood comes. Moreover, This similar with **Dipali et al (2009)** who found that the knowledge regarding the organ from where menstrual blood comes was correctly reported as uterus by 73 (33.64%) girls whereas 113 (52.07%), 16 (7.38%), and 15 (6.91%) reported urethra, ovary and stomach respectively. The girls were not able to differentiate between urethral and vaginal opening. This shows the low level of knowledge among girls about female anatomy. Also the topic was least talked by girls as they feel uncomfortable and shy.

Regarding the source of information about menstruation, more than two third of the studied girls reported that their mother was the main source of information about menstruation followed by friends (16.0%), sisters (11.3%), relatives (4.7%), teacher (2.7%) and finally TV (1.3%). Ideally, all mothers should make their daughters aware of menstruation even before they could attain menarche. This was supported by **Deo and Ghatgergi (2005)** who found that among urban girls the mother was reported as the main source of information on menstruation for 27.5 percent of the girls whereas it was a teacher for their rural counterparts (27.01%). Moreover, **Nair and Grover (2007)** mentioned that 41 percent of the girls received information about menstruation from their mothers, 22.4 percent got information from their elder sisters, 21 percent from their friends, 4.4 percent from television and 3.3 percent of the girls got information from books. Another study conducted by **Dipali et al (2009)** who stated that mother was found to be the main source of information for only 94 (43.3%) girls. This could be due to lack of proper communication between mother and daughter owing to traditional taboos, they feel awkward and embarrassed to discuss on this subject. The other sources of information were friends 57 (26.3%), sisters 32 (14.7%), relatives 18 (8.3%), literature 14 (6.5%) and T.V. 2 (0.9%). This finding interpreted in a very recent study carried out by **Lawan et al (2010)** who concluded that the majority, 136 (35.3%) first heard of menstruation and/or menstrual hygiene from their parents. Few subjects however (14.3%) learnt about the topic

from the school teachers and matrons. The remaining had their first contact with the information through friends (either in school or at home), sisters; or through other relatives.

According to findings of the current study, majority girls define the menstruation as normal physiological process in pre-test and there is no statistically a difference in post-test. The present results agreed with **Khanna et al (2005)** who reported that nearly 70% believed that menstruation was not a natural process. It was very sad to observe in the present study that most of the girls did not know about the source of menstrual bleeding and more than half of the girls were ignorant about the use of sanitary pads during menstruation. Also **Dasgupt and Sarkar (2008)** observed that 86.25% girls believed the menstruation is a physiological process, on the same line **Anjum et al (2010)** who have similarly found that 438 (87.6%) of the females believed that menstruation is a natural process of cleaning the system. The above observations might be due to poor literacy level of mothers or absence of proper health education programmes in school, which should focus on menstrual hygiene among girls. This reflects the impact of health education in improvement the awareness of female about this important physical process.

As regards the menstrual practices and various restrictions followed by the girls during menstruation. The present study findings showed that forty four percent girls didn't perform household activities during menses, and there is no significant difference was seen in the post test. This showed the influence of socio-cultural beliefs and taboos regarding menstruation among these adolescent girls. Even literate females found it difficult to go against the restrictions, owing to such strong socio-cultural beliefs and practices. Such different types of restrictions practiced during menstruation were also reported by **Dasgupta & Sarkar (2008)** in their study where 70.59 percent of the girls did not attend any religious occasion, 42.65 percent did not play, 33.82 percent of them did not perform any household work and 10.29 percent of the girls did not attend any marriage ceremony during the menstrual period.

The current study revealed that only 65 (43.33%) girls reported that they wash their genitalia with soap and water whenever they change their cloths/sanitary pads in the pre-test period, whereas a significant improvement was observed in their menstrual practice in the post-test. This findings were incongruent with **Adinma (2008)** who found that the amongst materials used as menstrual absorbent, toilet tissue paper were most commonly used (41.31%) among Nigerian school girls,

followed by sanitary pads (32.7%), cloths (14.4%) and multiple materials (10.7%) was used by the girls. This also was asserted by **Dipali et al (2009)** who stated that only (29.95%) girls reported that they wash their genitalia often with soap and water whenever they change their cloths or sanitary pads whereas following health education in the post-test period, there was significant improvement in the menstrual practice ($P < 0.01$). In the present study, 36 (24.0%) girls used only cloths during menstruation, 48 (32.0%) used only sanitary pads this finding may be due to non affordability of sanitary pads. While 66 (44.0%) girls used sanitary pads only during the first two days of cycle as the flow is heavy in these days while in the next 2-3 days, they preferred cloths for menses. On the same line, **(Omidvar & Begum, 2010)** highlighted that two thirds of selected girls (68.9%) used disposable pads and a small proportion (7.4% and 19.1%) used cotton or cloth material, respectively.

The results of the present study revealed that more than half girls washed their cloths only with water and 48 (47.05%) washed with soap and water in the pre-test phase. Which increased to the 89 (87.25%) girls washing their cloths with soap and water in the post-test with significant difference. For drying the cloths, in the pre-test period, only 6 (5.88%) girls sun dried their cloths which increased to 31 (30.39%) in the post-test phase. This results come in agreement with **Dipali et al (2009)** who mentioned that 60 (51.28%) girls washed their cloths only with water and 57 (48.72%) washed their cloths with soap and water the pre-test phase, which increased to 102 (87.18%) girls washing their cloths with soap and water in the post-test phase. As regard to drying the cloths, in the pre-test period, only 5 (4.27%) girls sun-dried their cloths which increased to 37 (31.62%) in the post-test period. In the present study, regarding to the final disposal off the used cloths, in the pre-test period, 11 (10.78%) girls burnt it, 54 (52.94) girls threw it in the dustbin, 3 (2.94%) girls buried it and 34 (33.33%) girls threw it by the roads. In the post-test period, 73 (71.56%) girls reported that they threw the used cloths in the dustbin. Such menstrual practices were also reported in another study conducted by **Adhikari et al (2009)** who found among adolescent school girls in Nepal where 59 percent of the girls dried their washed reusable absorbent materials (cloths) outside the house and under sunlight. For final disposal of the menstrual materials, 43 percent of the girls buried their absorbent materials followed by 35 percent threw with other wastes and 19 percent burnt the materials.

According to findings of the current study, 47 (41.22%) girls reported that they changed the

pads only twice a day during the pre-test period while reduced to 12 (10.52%) in the post-test phase. Thereby showing improved menstrual hygiene and practice following health education in this respect, **Murray et al., (2002)** who stressed that, the women should change perineal pads for menstrual protection, because regular changing (every 3 to 4 hours) prevents buildup of vaginal bacteria and eliminates odor. Naturally, if menstruation period is heavy, they should change pads more. This result goes with the result obtained by **El-Guindi et al., (2003)** who claimed that the frequency of changing of menstrual pads or cotton towels was reported by higher percentage of students in follow-up period and this reflects the importance of offering guideline courses.

Conclusion

The present study had revealed unhealthy menstrual practices, low level of knowledge and various misconceptions among adolescent school girls regarding menstruation. The study also clearly points out the impact of health education in improving their knowledge and practices. Taking into account the health implications and prevailing socio-cultural and economic factors, there is an urgent need for intensifying effective strategies to persuade the adolescent school girls to adopt healthy menstrual practices. A well-informed continuous, menstrual hygiene is far from satisfactory among a large proportion of the adolescents while ignorance, false perceptions, unsafe practices regarding menstruation and reluctance of the mother to educate her child are also quite common among them.

Recommendations

In the light of the findings of the current study, the following recommendations are suggested:

- 1) School education programme should be imparted to the students. Further, emphasis also needs to be given through workshops and seminars on "Adolescent Reproductive Health".
- 2) It is important to educate adolescents about issues related to menstruation, so that they can safeguard themselves against various infections and diseases. This could further help them to lead a healthy life. The data of the study can be used for planning programmes, making new policies for improving the level of information especially, for adolescent girls.
- 3) The above findings reinforce the need to encourage safe and hygienic practices among the adolescent girls and bring them out of traditional beliefs, misconceptions and restrictions regarding menstruation.

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