

The effect of educational intervention on the practice of menstrual hygiene among rural adolescent students in El-Mehala El- Kobra villages in Gharbia governorate

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Abstract

Adolescence is the most important and sensitive period of one's life. 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 in adverse health outcomes. So learning about menstrual hygiene is a vital aspect of health education for adolescent girls. The aim of the study was to evaluate the effect of educational intervention on the practice of menstrual hygiene among rural adolescent students in El-Mehala El- Kobra villages in Gharbia governorate. A quasi- experimental study was used. The study was conducted in five villages with preparatory schools selected by purposive random sample technique . The preparatory schools in each village were included in the study. The study sample comprised one class of third grade in each preparatory school in the previous setting. The total number of girl students was 183. Two tools were developed to obtain the necessary data:- Tool (I) A questionnaire sheet, and tool (II) Assessment of facilities for menstrual hygiene at schools and homes. The age of the study sample ranged from 13-16 years, with a mean of 14.55 ± 0.55 years. More than half of them (53%) their duration of menstruation ranged from 3-5 days and more than half of them (54.1%) their family size were 5-6 members. Mothers were the most (90.1%) common preferred sources of information about menstruation and menstrual hygiene. Regarding menstrual hygiene practices (54%) weren't bathing during menstrual period , all of the girls reported that they used pads during menstruation period , more than half of them changed pads twice daily and (56.8) of them kept pads in special places. There were significant improvement in the score of knowledge and practices among study sample regarding menstrual hygiene pre, immediate and 3 months post-program ($f=194.26^*$, $p=0.0001^*$ and $f= 162.14^*$, $p= 0.0001^*$ respectively) . It can conclude from this study that the health education program was effective and have positive effects on the menstrual knowledge and practice of rural adolescent students. Mothers were the most important source of information about menstruation and menstrual hygiene of rural adolescent students. The study recommended that implementing educational program among elementary, preparatory, and secondary schools about menstrual hygiene for improving students' menstrual knowledge and to encourage safe and hygienic practices among the adolescent girls and bring them out of traditional beliefs, misconceptions and restrictions regarding menstruation. Also it is important that nurses participate in public health awareness program to create better awareness among adolescents. Such initiative would make adolescents population self sufficient to manage their health and wellbeing.

Key words: Menstrual education program (MEP), menstrual knowledge, practices, menstrual hygiene, menarche, adolescents.

Introduction

Early adolescence is a time of physical, intellectual, emotional, and social development during which young people confront many questions. Physical maturation and particularly sexual maturation, has significant effects on self-concept and social relationships during this period⁽¹⁾. Adolescence is the period of transition from childhood to adulthood. WHO has defined adolescence as the age group of 10-19 years. This transitional period is marked with the onset of menarche^(2, 3). Adolescents comprise 20% of the world's total population⁽⁴⁾. Out of 1.2 billion adolescents worldwide, about 85% live in developing countries⁽⁵⁾. Adolescents in Egypt form around 25 percent of the country's population, and represent even greater proportion of the country's human potential^(6,7). Menarche is the onset of menstruation and it is one of the most significant milestones in a woman's life. The mean age at menarche varies from population to population and is known to be a sensitive indicator of various characteristics of the population including nutritional status, geographical location, environmental conditions, socioeconomic standard and indulgence in strenuous physical activity^(1, 3, 8, 9). Studies suggested that menarche tends to appear earlier in life as the sanitary, nutritional and economic conditions of a society improve^(10, 11). For

most females, it occurs between the age of 10 and 16 years until 45 to 55 years; however, it shows a remarkable range of variation⁽⁹⁾. The normal range for ovulatory cycles is between 21 and 35 days. While most periods last from three to five days, duration of menstrual flow normally ranges from two to seven days. For the first few years after menarche, irregular and longer cycles are common. A woman will have approximately 500 periods in her lifetime. The estimated blood loss is between 50 ml and 200 ml.^(9, 12, 13)

Further evidence for menstruation as a taboo topic is the ways in which menstruation is discussed and the language used to describe it reveal how society views the events. Across cultures, girls frequently take about the physical and psychological implications of their menstrual cycles. Egyptian culture like other cultures, women and girls use different slang's terms when they refers to menstruation. Also girls are considered menstruation is an embarrassing, odorous, painful, shameful and hygienic problem that girls must cover up and hide from public view, particularly men's view^(14, 15). So before bringing any change in menstrual practices girls should be educated about the facts of menstruation and its physiological implications. 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 compulsory sex education and health education on menstrual hygiene so that they can discuss freely about it without hesitation^(1, 16).

Hygiene related practices of young girls during menstruation are of considerable importance as they don't have experience, especially during the onset, as menstrual flow could occur accidentally while they are still in class or out of home. Availability of water and privacy in schools to change products and dispose used materials has got psychological impact and disruption of academic performance⁽¹⁾. The manner in which a girl learns about menstruation and its associated changes may have an impact on her response to the event of menarche. Although menstruation is a natural process, it is linked with several misconceptions and practices, which sometimes result into adverse health outcomes⁽¹⁷⁾. Because of various myths, misconceptions and restrictions practiced during menstruation, the adolescent girls often develop negative attitudes towards this natural physiological phenomenon. The majority of the girls lack scientific knowledge about menstruation and puberty. Adolescent girls often are reluctant to discuss this topic with their parents and often hesitate to seek help regarding their menstrual problems. Unhygienic menstrual practices may affect their health such as increased vulnerability to Reproductive

Tract Infections (RTIs) and Pelvic Inflammatory Diseases (PIDs) and other complications. Use of sanitary pads may be increasing but not among girls from rural and poor families^(17, 18, 19).

Girls should be educated about "menstruation and healthy menstrual practices" through expanded programmes of health education in schools. Data on their level of knowledge and practices are beneficial for planning programmes for improving their awareness level⁽¹⁶⁾. Hence; this study was done to evaluate the effect of educational intervention on the management of menstrual hygiene among rural adolescent students.

Aim of the study

The aim of the study **was** to evaluate the effect of educational intervention on the practice of menstrual hygiene among rural adolescent students in El-Mehala El- Kobra villages in Gharbia governorate .

Materials and Method

Materials

Study design:-

A quasi- experimental study was conducted to evaluate the effect of health education intervention on the practice of menstrual hygiene among rural adolescent students in El-Mehala El- Kobra villages in Gharbia governorate .

Setting:

El-Mahala El- Kobra center at El-Gharbia governorate has 55 villages. The study was conducted at five villages of them that had

preparatory schools. They were selected by purposive random sample technique. The preparatory schools in each village were included in the study. Their number was five. These villages were El-Amria, Saft trab, El-gabria , El-hayatem and Mehalt Abo- Ali village.

Sample:-

The study sample comprised one class of third grade in each preparatory school in the previous setting. The students' number in each class ranged from 24 to 46 students girls. The total number of all participants was 183girl students.

Tools of the study:-

Two tools were developed by the researchers to obtain the necessary data:-

Tool (I) A questionnaire sheet.

This was developed by the researchers to collect data about the study sample. This tool included the following parts:-

Part(1) Socio-demographic characteristics :-

This included name, age, grade level, religion, with whom she lives at present , number of family members, level of parent's education, parents' occupation, economic status of the family, number of rooms, and source of drinking water .

Part(2) knowledge regarding menstruation and menstrual hygiene:-

This included the following:-

1. Age of menarche, place of the first menstruation occurred, first reaction experienced for the first time, and

protective material used during the first days at menarche.

2. Communication with her mother about menstruation, background about menstruation before starting menstruation, source of information about menstruation before she started.
3. Meaning of menstruation, causes of menstruation, place of blood flow of menstruation come from, normal age for menstruation to begin, the average normal menstrual cycle interval, the average of her menstruation flow, ability of girl to go to school during the menstruation, ability to cook food during the menstruation, and alternative names for menstruation,.
4. Restrictions practiced by family or community during menstruation such as prohibit attendance of any religious occasion, eating certain foods, playing , household work, attendance of school attendance any marriage ceremony during menstrual period.
5. Preferred source to receive more information on menstrual matter, and sources of information about menstruation and menstrual hygiene.

Part (3) Previous menstrual health problems:-

This included adolescent girls 'experience of any health problems during menstruation, and severity of each problem and their act regarding these problems and the effect of these problems in school performance.

Part (4) Practices related to current menstrual hygiene:-

This included bathing during menstruation, eating food on menstruation, pads uses during menstruation(types, frequency of change, number of pads during menstruation, methods of disposes the pads, reusing the pads), alternative name for the menstrual protective materials at home with family members or friends, cleaning of genitalia for menstrual purpose and materials use in this cleaning area and maintenance of privacy, activity and rest during menstruation, sources of information regarding these practices.

Tool (II) Assessment of facilities for menstrual hygiene.

This tool included the following parts:-

Part (1) Assessment of facilities for menstrual hygiene at the home:-

This included availability of special room, water supply, number of latrines, method of waste disposal, availability of cleansing materials and availability of money to pay pads.

Part (2) Assessment of facilities for menstrual hygiene at school:-

This assessed by using checklist for observation of schools. A checklist was developed and used by the researchers to make an inventory on sanitary facilities available in the schools. The list contained questions on availability and accessibility of water near and in latrines, privacy and adequacy of latrines, availability of disposal

sites for menstrual hygiene material, and the presence of clinic or clinic services to the students for consultation and counseling during menstruation within the school premises.

Method

- 1- Before conducting the study, a written permission letter was obtained from the Faculty of Nursing Tanta University to responsible authorities of Ministry of Education and school principals.
- 2- Ethical considerations: -
 - a- Students' informed consent was obtained.
 - b- Rights, anonymity and confidentiality of the respondents were respected in all phases of the study.
 - d- All students were informed about the purpose and the benefits from this study.
- 3- Before embarking on actual study, a pilot study was carried out on twenty students chosen from one school of the schools included in the study. Those students were excluded from the study sample. In order to test the reliability of the tool, test – retest was done .The pilot study conducted twice, 2 weeks apart. The first test done and analyzed, its results were 78.74% and the second retest was 78.13%.
- 4- The tool was revised submitted to seven experts in community health nursing from faculty of nursing two professors

and three lectures and public health and preventive medicine from faculty of medicine two professors Tanta University.

- 5- Opinion of experts on tools of the study was analyzed face validity 95% content validity 97%.

Data collection: -

- Tool (I) and tool (II) part (1) administered individually to each student of the study sample before start program.
 - Tool (I) part (2, and 4) administered individually to students participate in the program three times before, immediate and after three months of implementation of the program.
 - Tool (II) part (2) administered by the researcher one time only for each school at the beginning of the study.
- 7- Implementation phase of the program.

The first step of developing educational intervention program was formulating program objectives. The general aim of the program was to evaluate the effect of educational intervention on the management of menstrual hygiene among rural adolescents' students. The field work of this study was done in five months starting from the November 2010 to the march 2011. Each class of girl students was first informed about the program objectives to attain their active participation and cooperation during the implementation of the program.

The researchers visited each school several times:-

- First time to meet the director of each school, introduce the official letter, explain the objectives of the program and determine the time of the next visit to start the program implementation.
- Second time for explanation of the purpose of the study and performing the pretest (45 minutes).
- Third and fourth times for implementing educational intervention regarding menstruation and healthy menstrual practices. The contents of the program were included the following items short note about anatomy of female genital tract, meaning of menstruation, causes of menstruation, place of blood flow of menstruation come from, normal age for menstruation to begin, the average normal menstrual cycle interval, the average of her menstruation flow, ability of girl to go to school during the menstruation, ability to cook food during the menstruation, and alternative names for menstruation
- Also the contents of the program were included restrictions practiced by family or community during menstruation such as prohibit attendance of any religious occasion, eating certain foods, playing , household work, attendance of school attendance any marriage ceremony during menstrual period. The personal

hygiene and practices during menstruation were taken more attention during the program.

- The contents of the program were organized and presented in two sessions each session was (90 minutes). This was imparted to the rural adolescents school girls through lecture, group discussion with the help of audio-visual aids (power point program) .Each session was followed by question-answer session to clarify their doubts and answer their questions related to menstruation and menstrual hygiene practices.(45 minutes).These sessions were done in computer laboratory in each school. Then the questionnaire was again administered to the students (immediate post test).
- The last time after three months from the implementation of the program to do post test to asses the effect of educational intervention and the remaining knowledge and practices about menstruation and menstrual hygiene practices.

6- Evaluation of the program.

Three assessments were done to the girl students in order to test their knowledge, practices about menstruation and menstrual hygiene. Therefore, tool (I) parts (2and 4) were used three times before, immediate and after implementation of the program.

Statistical analysis

The data were computerized and verified using the SPSS (Statistical package for social science) version 13 to perform tabulation qualitative variables were described in frequency and percentages, while quantitative variables were described by means and standard deviation. Analysis of collected data was done through the use of several statistical tests as: Chi-square (X^2). P values of <0.05 were considered statistically significant.

Results

Table (1) represents the distribution of the studied sample according to their menstrual history and socio-demographic characteristics. It shows that the age of the studied sample ranged from 13-16 years with a mean of 14.55 ± 0.55 years with a median of 15 years. Nearly two thirds of them (62.8%) were aged 9-11 years at menarche, more than half of studied sample (53 % and 56.8% respectively) their duration of menstrual flow ranged from 3-5 days and average of their menstrual interval ranged from 26-30 day. The majority of the studied sample (95%) were living with their parents , and more than half of them their family size ranged from 5-6 members .Regarding educational level of their parents , more than half of fathers and mothers (53.6 % and 60.1 respectively) were illiterates and basic educational level. The majority of them their mothers' occupation was house wife. Nearly two thirds of the

studied sample (60.7% and 61% respectively) their family income were enough and their source of drinking water was public resources and the majority of them (73.8%) their living rooms ranged from 3-5 room.

Table (2) shows that distribution of the studied sample according to their reaction , physical symptoms at menarche and their sources of information about menstruation .the table shows that the majority of the studied subjects (94.6%) had menarche at home and the reaction to menarche was (70.5%) of them run to their mothers, 6% were embarrassed and 5.5% were cried. The majority of them (80.3%) had abdominal and back pain as physical symptoms at menarche, more than two thirds (68.3%) reported that menstruation is a special event of girl .regarding the awareness about menstruation before encompassing menarche it is evident that nearly half of the studied sample were awarded and the most important previous and preferred source of information about menstruation was mothers (60.2% and 90.1%) respectively.

Table (3) elicits distribution of the studied sample according to their usage of pads during menstruation, advantages and disadvantages of pads. The majority of studied sample (83.1% and 73.7% respectively) reported that they prepared commercial pads as protective materials for

menarche and buy it by them self. The table shows that all studied sample used pads during menstruation and the majority of them (80.9%) used commercial pads , only (9.8% and 6% respectively) used knew clothes and old clothes. Regarding change pads at school only (19.7%) of studied sample changed pads at school, more than half of them (51.9%) reported good absorbent as advantages of using pads and nearly two thirds of them (63.4 and 61.2%) reported that there was not disadvantages of using pads and their mothers were the main source of information about practices regarding menstruation.

Table (4) represents distribution of the studied sample according to their health problems during menstruation. The table shows that the majority of studied sample (83.1%) had health problems during menstruation and nearly half of them (47.5%) had abdominal and back pain and (9.3%) of them had irregularity of menstruation. Regarding severity of pain nearly half of them (48.6%) reported that pain was interfering with school activities and more than one third of them (36.6%) used traditional medicine as an intervention for relieving health problems. The majority of the studied sample(78.7%) was felt with discomfort in school during menstruation and nearly half of them (48.6%) reported that health problems affect their school achievement.

Table (5) represents distribution of the studied sample according to their specific knowledge regarding menstruation. The table shows that before the implementation of the program (15.8% , 12% and 28.4% respectively) reported that the age of 9-16 years as age of menarche, 3-7 days as average of menstrual flow and 20-35 days as average of menstrual interval in normal girls, significant improvement was observed regarding these items from preprogram, immediate post-program and 3 months post-program. In the preprogram it was observed that nearly one thirds of the studied sample reported that menstruation is a physiological process, nearly one quarter of them (20.2%) reported that hormonal activity as a cause of menstruation and more than one third of them (38.8%) did not know origin of menstrual bleeding. these answers were changed immediate post-program and 3 months post-program to be (97.3%, 98.5% and 97.3% and 98.5% and 97.3%) respectively.

Table (6) regarding knowledge of studied sample regarding types of restrictions practiced during menstruation. In the preprogram more than half (56.8%) of them did not attend school, more than one quarter of them did not attend marriage ceremony , about three quarter of them (75.4%) did not eat all types of food such as vegetables(onion, cabbage and cauliflower), the majority of studied sample (85.2%) did not

perform household work during menstruation. After implementation of health educational intervention program there were significant improvements among these items.

Table (7) represents distribution of the studied sample according to their specific practices regarding menstrual hygiene. It shows that in the pre test phase more than half of the studied sample (54.1%) did not bath during menstruation . while in the post test phase the most of them (98.5% and 95.6% respectively) bathed during menstruation and (97.3%) of them bathed daily. In the preprogram all of the studied sample (100%) used pads during menstruation and majority of them (80.9%) used commercial pads and about half of them (50.8) changed pads twice daily. Regarding the method of disposal of the pads nearly half of them (45.9%) disposed the pads in house dustbins. In the immediate post-program and 3 months post-program the majority of them (98.5% and 96.7%) respectively used commercial pads and changed it when needed and (98.5% and 97.3%) properly disposed the pads, i.e. they wrap the used pads in paper bag and disposed in the place used for solid waste disposal (house dustbin). Regarding cleanliness of external genital area, keeping privacy during doing hygiene, daily living activity and rest during menstruation. There were significant improvements from pre program, immediate post-program and 3

months post-program X^2 (16.25*, 26.25*, 36.28* and 10.25*) respectively $P < 0.5$.

Table (8) represents distribution of the studied sample according to presence of facilities for hygienic care during menstruation at home. It shows that more than half studied sample (57.4%) had special room. the majority of them (88.0 , 84.2 and 95.8%)respectively had water and waste disposal, enough money for buying pads and enough cleansing materials (soap, antiseptic solution and shampoo).

Table (9) represents distribution of the study group according to presence of facilities for hygienic care during menstruation at school .it shows that all schools were governmental schools. Sixty percentages of schools had more than 700 students. Regarding number of toilets, latrines designated for girls, tap water, availability of tap water near and in the latrines, clinic in the school and social workers it was found that all schools had them. Three schools did not have a pit for waste disposal and two of them did not have place for burning waste disposal. The daily schedule for cleanliness of latrines was twice daily for majority of schools (80%).

Table (10) represents score of knowledge among studied sample regarding menstrual hygiene Pre, Immediate and 3 Months Post-Program. The table shows that in the preprogram only (9.3%) of studied sample had good score of knowledge but the

majority of them (89.1% and 85.2% respectively) had the same score immediate post-program and 3 months post-program. It shows also there were significant improvements between score of knowledge from pre program, immediate post-program and 3 months post-program $F=194.26^*$ and $P < 0.5$.

Table (11) represents score of practices among studied sample regarding menstrual hygiene Pre, Immediate and 3 Months Post-Program. The table shows that in the pre program only 7.1%of studied sample had good score of practices this score was improved immediately post program and three months post program to be (85.2% and 79.8% respectively. It shows also there were significant improvements between score of practices from pre program, immediate post-program and 3 months post-program $F=162.14^*$ and $P < 0.5$.

Table (12) and figure (1) represent relationship between knowledge and practices of the studied students regarding menstrual hygiene pre, post and 3 months post-Program. There was significant relationship between students' knowledge and practice regarding menstrual hygiene pre, post and 3 months post-program $P < 0.5$.

Table (1) Distribution of the studied sample according to their menstrual history and socio-demographic characteristics.

Socio-demographic Characteristic	Study Group 183	
	No	%
Age		
13	2	1.1
14	81	44.3
15	97	53.0
16	3	1.6
Range	13-16	
Mean \pm SD	14.55 \pm 0.55	
Median	15.00	
Age of study group at menarche		
9-11	115	62.8
12-14	50	27.4
15+	18	9.8
Duration of menstrual flow of study group		
3-5	97	53.0
3-7	42	23.0
5-7	44	24.0
Average of menstrual interval of study group		
20-35	52	28.4
26-30	104	56.8
30-35	27	26.8
Living with		
Parents	174	95
Father only	3	1.6
Mother only	6	3.3
Family size		
3-4	45	24.6
5-6	99	54.1
7+	39	21.3

Educational level of fathers		
Illiterate Primary education	17	9.3
Basic education	81	44.3
secondary education	54	29.5
University education	31	16.9
Other		
Educational level of mothers		
Illiterate	47	25.7
Basic education	63	34.4
Secondary school	53	28.9
University education	20	10.9
Fathers' occupation		
Work	167	91.3
Not work	16	8.7
Mothers' occupation		
Work	48	26.2
House wife	135	73.8
Family income		
Enough	111	60.7
Not enough	18	9.8
Enough and more	54	29.5

Con. table (1)

Socio-demographic Characteristics	Study Group 183	
	No	%
Numbers of living room		
Less than 3	29	15.8
3-5	135	73.8
More than 5	19	10.4
Source of drink water		
Public sources	112	61.1
Underground sources	34	18.6
Privet sources	37	20.2

Table (2): Distribution of the studied sample according to their reaction , physical symptoms at menarche and their sources of information about menstruation.

Student's knowledge	Study Group 183	
	No	%
Reaction of menarche		
Crying	10	5.5
Embarrassed	11	6.0
Excited and joyful	8	4.4
Run to mother	129	70.5
Run to friend	2	1.1
Run to sister	16	8.7
Not tell anyone	7	3.8
Physical symptoms of menarche		
Abdominal	123	67.2
back pain	24	13.1
Sleeplessness	17	9.3
Weakness	14	7.7
Heavy bleeding	5	2.7
Non of the above	13	7.1
Menstruation is a special event.		
Yes	125	68.3
No	58	31.7
Place of sleeping during menstruation		
Same place	162	88.5
Separated place	21	11.5
Perform housing daily activity during menstruation		
Yes	27	14.8
No	156	85.2
Awareness about menstruation before encompassing menarche		
Yes	86	47.0
No	97	53.0

Previous information about menstruation		
Yes	126	68.9
No	57	31.1
In case of yes, source		
Mother	112	61.2
Friends	11	6.0
Teachers	3	1.6
Reading	3	1.6
Preferred source of information about menstruation		
Mother	165	90.1
Teachers	2	1.1
Doctors and school health nurse	10	5.5
Mass media	6	3.2

Table (3): Distribution of the studied sample according to their usage of pads during menstruation, advantages and disadvantages of pads.

Practices regarding menstrual hygiene	Study Group 183	
	No	%
Protective materials for menarche		
Commercial pads	152	83.1
Old clothes	4	2.2
New clothes	27	14.8
Prepare protective materials for menarche		
By mother	25	13.6
By grand sister	23	12.6
Buy it	135	73.7
Type of pads		
Commercial pads	148	80.9
Old clothes	11	6.0
New clothes	18	9.8
All of the above	6	3.3

Reuse of pads		
Yes	35	19.1
No	148	80.9
Change pads at school		
Yes	36	19.7
No	147	80.3
Advantages of using sanitary pads		
None	6	3.3
Comfortable	53	29.0
Good absorbent	95	51.9
Don't filtrate	13	7.1
Don't cause itching	8	4.4
Don't cause any discharge	8	4.4
Disadvantages of pads		
None	116	63.4
Expensive	44	24.0
Not comfortable	23	12.6
Sources of information about practices regarding menstruation		
Mother and relatives	112	61.2
Friends	26	14.2
Teachers	15	8.2
Doctors and school health nurse	26	14.3
Mass media	4	2.1

Table (4): Distribution of the studied sample according to their health problems during menstruation

Health problems	Study Group 183	
	No	%
Health problem during menstruation		
Yes	152	83.1
No	31	16.9
In case of yes		
Irregularity	37	20.2
Excess flow	11	6.0
Abdominal and back pain	87	47.5
Headache	4	2.2
Mood change	9	4.9
Sleeplessness	4	2.2
Severity of pain		
Not interfere school activities	73	39.9
Interfere school activities	89	48.6
Accompanied with vomiting and nausea	21	11.5
Intervention for relieving health problems		
Go to family member	48	26.2
Go to doctor or school health nurse	31	16.9
Take medication without consultation	26	14.2
Go to hospital	11	6.0
Use traditional medicine	67	36.6
Feeling with comfort in school during menstruation		
Yes	39	21.3
No	144	78.7
Effect of health problems on school achievement		
Yes	89	48.6
No	94	51.4

Table (5): Distribution of the studied sample according to their specific knowledge regarding menstruation .

Items	Preprogram n=183		Immediate post program n=183		3 months post- program n=183		X ²	P
	N	%	N	%	N	%		
Age of menarche, in general								
9-11	34	18.6	0	0.0	5	2.7	66.93*	0.0001*
9-16	29	15.8	165	90.2	160	87.4		
12-14	79	43.2	18	9.8	18	9.8		
15-17	12	6.6	0	0.0	0	0.0		
Don't known	29	15.8	0	0.0	0	0.0		
Average of menstrual flow in normal girls								
3-5	95	51.9	13	7.1	25	13.7	74.09*	0.0002*
3-7	22	12.0	170	92.9	158	86.3		
5-7	17	9.3	0	0.0	0	0.0		
Don't known	49	26.8	0	0.0	0	0.0		
Average of menstrual interval in normal girls								
20-35	52	28.4	177	96.7	178	97.3	66.83*	0.0001*
26-30	49	26.8	4	2.2	5	2.7		
30-35	27	14.8	2	1.1	0	0.0		
Don't known	55	30.0	0	0.0	0	0.0		
Meaning of menstruation								
Physiological process	57	31.1	178	97.3	178	97.3	54.87*	0.0001*
Pathological process	27	14.8	0	0.0	5	2.7		
Curse from God	34	18.6	5	2.7	0	0.0		
Don't known	65	35.5	0	0.0	0	0.0		

Causes of menstruation								
Age	35	19.1	0	0.0	1	0.5	24.96*	0.0002*
Hormonal activity	37	20.2	180	98.5	178	97.3		
Curse from God	3	1.6	1	0.5	1	0.5		
Enzymes changes	34	18.6	1	0.5	1	0.5		
Age and hormonal activity	22	12.0	1	0.5	2	1.1		
Don't know	52	28.4	0	0.0	0	0.0		
Origin of bleeding								
Bladder	8	4.4	1	0.5	178	1.1	34.87*	0.0001*
Uterus	57	31.1	180	98.5	178	97.3		
Fallopian tube	25	13.7	1	0.5	1	0.5		
Vagina	22	12.0	1	0.5	1	0.5		
Don't know	71	38.8	0	0.0	1	0.5		

Table (6): Distribution of the studied sample according to their specific knowledge regarding restricted practices during menstruation

Items	Preprogram n=183		Immediate post program n=183		3 months post- program n=183		X ²	P
	N	%	N	%	N	%		
1- Attendance to school during menstruation Yes No	79 104	43.2 56.8	165 18	90.2 9.8	160 23	87.4 12.6	N 50.87*	0.0001*
2- Go to religious occasion during menstruation Yes No	130 53	71.0 29.0	180 3	98.5 1.5	178 5	97.3 2.7	32.47*	0.0001*
3- Go to marriage ceremony during menstruation Yes No	75 108	41.0 59.0	180 3	98.5 1.5	175 8	95.6 4.4	30.87*	0.0001*
4- Eat all types of food during menstruation Yes No	45 138	24.6 75.4	183 0	100.0 0.0	180 3	98.5 1.5	25.27*	0.0001*
5- Cook food during menstruation Yes No	34 149	18.6 81.4	178 5	97.3 2.7	165 18	90.2 9.8	42.57*	0.0001*
6-Perform household work during menstruation Yes No	27 156	14.8 85.2	178 5	97.3 2.7	160 23	87.4 12.6	47.77*	0.0001*

Table (7): Distribution of the studied sample according to their specific practices regarding menstrual hygiene

Practices items	Preprogram n=183		Immediate post program n=183		3 months post- program n=183		X ²	P
	N	%	N	%	N	%		
Bathing during menstruation								
Yes	84	45.9	180	98.5	175	95.6	46.98*	0.0001*
No	99	54.1	3	1.5	8	4.4		
Time of bathing during menstruation								
At first day	7	3.8	5	2.7	0	0.0	64.19*	0.0002*
At third day	28	15.3	0	0.0	5	2.7		
Daily	49	26.8	178	97.3	178	97.3		
Usage of pads during menstruation								
Yes	183	100.0	183	100.0	183	100.0	56.83*	0.0001*
No	0	0.0	0	0.0	0	0.0		
In case of yes, type								
Commercial pads	148	80.9	177	96.7	177	96.7		
Old clothes	11	6.0	6	3.3	6	3.3		
New clothes	18	9.8	0	0.0	0	0.0		
All of the above	6	3.3	0	0.0	0	0.0		
Frequency of change of pads /day								
Once	36	19.7	1	0.5	2	1.1	54.87*	0.0001*
Twice	93	50.8	1	0.5	2	1.1		
Thrice	43	23.5	1	0.5	2	1.1		
On need	11	6.0	180	98.5	177	96.7		
Pads disposal								
In house dustbin	84	45.9	180	98.5	178	97.3	34.96*	0.0001*
In the bath	55	30.1	3	1.5	5	2.7		
Burial	40	21.9	0	0.0	0	0.0		
Burn	4	2.2	0	0.0	0	0.0		

Cleaning external genital area during menstruation								
Yes	167	91.3	183	100.0	183	100.0	16.25*	0.0001*
No	16	8.7	0	0.0	0	0.0		
Cleaning materials								
Soap and water	106	57.9	106	57.9	106	57.9	2.02	0.214
Plain water only	37	20.2	37	20.2	37	20.2		
Water and antiseptic solution	40	21.9	40	21.9	40	21.9		
Keeping privacy during doing hygiene								
Yes	162	88.5	180	98.5	178	97.3	26.25*	0.0001*
No	21	11.5	3	1.5	5	2.7		
Daily living activity during menstruation(cleansing ,grooming, cooking)								
Yes	53	29.0	180	98.5	178	97.3	36.28*	0.0001*
No	130	71.0	3	1.5	5	2.7		
Rest during menstruation								
Yes	125	68.3	183	100.0	183	100.0	10.25*	0.0001*
No	58	31.7	0	0.0	0	0.0		

Table (8): Distribution of the studied sample according to presence of facilities for hygienic care during menstruation at home

Facilities for hygienic care during menstruation at home	Study Group 183	
	No	%
Special room		
Yes	105	57.4
No	78	42.6
Water and waste disposal		
Yes	161	88.0
No	22	12.0

Number of bathroom		
One	126	68.9
Two	57	31.1
Enough money for buying pads		
Yes	154	84.2
No	29	15.8
Having enough cleansing materials (soap ,antiseptic solution and shampoo)		
Yes	175	95.8
No	8	4.4

Table (9): Distribution of the schools according to presence of facilities for hygienic care .

Facilities	School n=5	
	No	%
Type of school		
Government	5	100.0
Number of students		
Less than 250	1	20.0
250-350	1	20.0
More than 350	3	60.0
Number of toilets		
More than 5	5	100.0
Number of water closets		
Less than 5	2	40.0
5	1	20.0
More than 5	2	40.0
Number of bins at latrines		
Less than 5	2	40.0
5	1	20.0
More than 5	2	40.0

Number of latrines designated for girls More than 5	5	100.0
Number of tap water More than 5	5	100.0
Available of tap water near and in the latrines Yes	5	100.0
Availability of water Yes No	4 1	80.0 20.0
Availability of bins Yes	5	100.0
Availability of pit for waste disposal Yes No	2 3	40.0 60.0
Availability of place at school for burning waste disposal Yes No	3 2	60.0 40.0
Availability of cleanliness of latrines Yes	5	100.0
Numbers of workers assigned to clean the latrines Less than 3	5	100.0
The daily schedule for cleanliness latrines Once /day Twice/day	1 4	20.0 80.0
Clinic in the school Yes	5	100.0
Social workers the school Yes	5	100.0

Table (10): Score of knowledge among studied sample regarding menstrual hygiene Pre, Immediate and 3 Months Post-Program.

Time of assessment	score of knowledge among studied sample regarding menstrual hygiene n=183					
	Poor		Moderate		Good	
	N	%	N	%	N	%
Pre-program	90	49.2	76	41.5	17	9.3
Immediately post-program	0	0.0	20	10.9	163	89.1
Three months post-program	2	1.1	25	13.7	156	85.2
F	194.26*					
P	0.0001*					

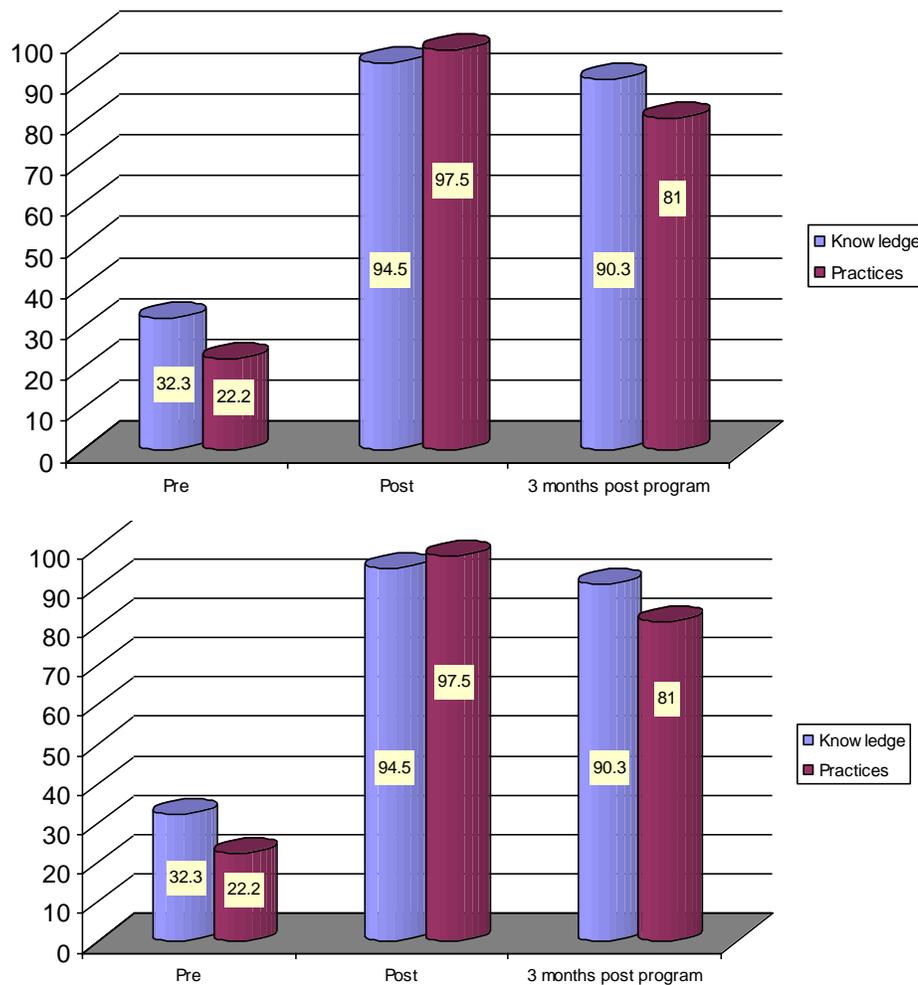
Table (11): Score of practices among studied sample regarding menstrual hygiene Pre, Immediate and 3 Months Post-Program.

Time of assessment	Score of practices among studied sample regarding menstrual hygiene n=183					
	Poor		Moderate		Good	
	N	%	N	%	N	%
Pre-program	70	38.2	100	54.7	13	7.1
Immediately post-program	2	1.1	25	13.7	156	85.2
Three months post-program	2	1.1	35	19.1	146	79.8
F	162.14*					
P	0.0001*					

Table (12) Relationship between knowledge and practices of the studied students regarding menstrual hygiene pre, post and 3 months post-program.

Items	Pre (n=183)		Post (n=183)		3 months post-program (n=183)	
	X ²	P	X ²	P	X ²	P
Knowledge	32.2	0.000*	94.5	0.001*	90.3	0.001*
Practices	22.2	0.001*	97.5	0.001*	81	0.001*

Figure (1): Relationship between knowledge and practices of the studied students regarding menstrual hygiene pre, post and 3 months post-program.



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