

Menstrual Attitude and Knowledge among Egyptian Female AdolescentsAbeer Eswi¹, Houaida Helal² and Wafaa Elarousy³¹ Maternity Nursing Department, Faculty of Nursing, Cairo University, Egypt² Community Health Nursing Department, Faculty of Nursing, Alexandria University, Egypt³ Pediatric Nursing Department, Faculty of Nursing, Alexandria University, Egyptdrabersaad@hotmail.com

Abstract: Aim: aim of the study was to assess the attitude and knowledge toward menstruation among Egyptian female adolescents. **Methods:** A descriptive cross sectional design was utilized for the study. The study was conducted in three public schools in Alexandria Governorate in Egypt. A total of 200 female students were recruited randomly for the study. A self administrated questionnaire was used as a tool for data collection, Menstruation attitude questionnaire (MAQ) was utilized as a valid and reliable tool for collecting the data. **Results:** Results of the study indicated that more than half of the participants reported that menstruation is event that happens to the girl during puberty that occurs monthly and spoiled blood the body gets rid of. Fifty percent of the participants reported that the girl must seek medical advice in case of severe bleeding while 25% of them reported that they should seek medical advice when menstruation is irregular and when menstruation associated with severe pain (21%). As regards to participants' attitude toward menstruation, the participants slightly agree that menstruation is a debilitating (4.22 ± 0.83), a bothersome (4.35 ± 1.20) and natural event (4.95 ± 1.32). Furthermore, they slightly agree that they can anticipate their menstruation (4.25 ± 1.13) and they denial the effect of it (4.28 ± 1.02). Results indicated that participants who have been informed about menarche before its onset have more positive attitude toward menstruation. **Conclusion:** Egyptian female adolescents were influenced by their mothers as they were the main source of information, followed by mass media, this may consequently affected their knowledge and attitude toward menstruation. Knowledge that preceded menstruation is one of the important factors that affected positively the Egyptian female adolescent's attitude toward menstruation.

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Keywords: menstruation, attitude, knowledge, adolescents.

1. Introduction

Yesterday's girl is today's adolescent and tomorrow's mother. Approximately 9% (one fifth) of the world's population is in the age group of 10-19 years, as they are passing through a transitional period, from childhood to adulthood, they are undergoing a lot of physical as well as psychological stress due to the changes taking place in the body⁽¹⁾.

Adolescence and puberty can be difficult times for all young people, but for girls in many developing countries, puberty, especially the onset of menstruation, poses particular challenges⁽²⁾. Menstruation is the cyclical shedding of the inner lining of the uterus, the endometrium, under the control of hormones of the hypothalamo-pituitary axis. Menarche, or the onset of menstruation, is a landmark feature of female puberty and signals reproductive maturity^(3, 4). The menarche is often horrifying and traumatic to an adolescent girl because it usually occurs without her knowing about it⁽⁵⁾. Anxiety, fear, confusion, and even depression are frequently reported experiences of menarche^(3, 4).

In social contexts where these issues are not openly discussed or where there is stigma and/or taboos surrounding menstruation, girls may have very little understanding of what is happening to them and

their bodies. A lack of adequate sanitary materials and private facilities makes it even more difficult for girls to have positive attitudes towards their bodies⁽²⁾. Furthermore, social prohibitions and negative attitude of parents in discussing the related issues openly has blocked the access of adolescent girls to right kind of information⁽⁶⁾. Different cultures view menstruation differently. The basis of many conduct norms and communication about menstruation in western industrial societies is the belief that menstruation should remain hidden. While in the Hindu faith, women are prohibited from participating in normal life during menstruation. She must be "purified" before she is allowed to return to her family, which has been presented as a negative view of menstruation. However in some respects Indians view menstruation, especially first menstruation or menarche, as a positive aspect of a girl's life. In South India, girls who experience their menstrual period for the first time are given presents and celebrations to mark this special occasion, though women who are menstruating are not allowed in the household for a period of 3 nights⁽⁷⁾.

In Islam, a menstruating woman is not allowed to enter the mosque for prayer, touch the Quran, or fast during Ramadan, moreover, she cannot practice sexual intercourse or have divorce at this time;

yet young girls are expected to clean, tidy and practice all daily activities⁽⁸⁾

Anjum (2010) reported that attitudes towards menstruation may adversely affect women's body image, perception of disease causation, diet, willingness to take medication, contraceptive use, and the ability to plan pregnancies⁽⁹⁾. In addition, Adinma & Adinma (2008) reported that faulty perceptions or misconception on menstruation and menstrual cycle will lead to faulty menstrual practices. Either of these may engender reproductive health problems in the adolescent, such as dysmenorrhea, gastrointestinal manifestations; depression; and reproductive tract infections which may in turn cause congestive dysmenorrhea⁽¹⁰⁾. As menstruation plays an important role in the health of a woman, it is crucial that a woman obtains accurate knowledge about menstruation and learns to accept menstruation as a positive, natural part of her life⁽¹¹⁾. Study of adolescents and menstruation concluded that adolescents suffer from a range of negative feelings such as guilt, shame and an inferiority complex as a result of lack of awareness regarding their growth processes. It stresses the need to orient parents and the community on a large scale through specially designed courses so as to have a positive impact on their attitudes and practices⁽⁵⁾.

Menstrual education is a vital aspect of health education. It is known that attitudes to menstruation and menstrual practices developed at menarche may persist throughout life. The study of the menstrual practices of adolescent girls unveils health issues that affect their adjustment to reproductive life and provides the basis for formulating health education strategies relevant for this crucial period in reproductive life⁽³⁾. Several researchers have found that girls who report being adequately prepared have more positive initial experience with menstruation⁽¹²⁾. School curricula typically do not cover the topic of menstruation and puberty in a very girl friendly way and so do not help girls to understand the changes in their maturing bodies. Also, male teachers and students often show insensitivity to menstruation⁽²⁾.

Adolescent females in schools may have their own attitude toward menstrual cycle, this attitude may be affected by cultural perspective, lack of knowledge, and embarrassment to speak about this normal phenomenon with their mothers at home or others. Also, there is scattered research that examines female attitude and knowledge among female adolescents in Egypt. Therefore, the current study will contribute to a better understanding of the Egyptian female adolescents' attitude and knowledge related to menstruation.

Aim: Aim of the study was to assess the attitude and knowledge toward menstruation among Egyptian female adolescents.

Research questions:

1. What is the attitude of the Egyptian female adolescents toward menstruation?
2. What is the knowledge of menstruation that is held by the Egyptian Female adolescents?
3. Is there is a relationship between the menstrual attitude and knowledge among Egyptian Female adolescents?

2. Material and Methods

Setting:

The study was carried out in three public schools in Alexandria Governorate in Egypt.

Design: A descriptive cross sectional design was utilized for the study as it suits its descriptive nature in which the relationship and differences exist in between two variables or more groups are examined, also, the cross-section design reports variables changing at one point in time⁽¹³⁾.

Sample

A total of 200 female students from public schools in Alexandria governorate in Egypt were recruited randomly for the study. A stratified random sample was used. Students from different grades were included in the study. Inclusion into the study was entirely on a voluntary basis and students who agreed to participate in the study were reassured that all information obtained are confidential and secure. Only female students who had attained menarche were eligible.

Data collection

The school authorities were contacted and informed about the nature and objective of the study. After obtaining the permission from the school authorities, the investigators visited the school as per pre-planned schedule for interviewing the adolescent girls. The adolescent girls were explained about the purpose of the study, and assured of confidentiality. A written consent was obtained from the girls before administering the questionnaire

Measurements

A. A self administered questionnaire was used as a tool for data collection, it included personal data related to age, age of menarche, and the student's knowledge about menstruation.

B. Menstruation attitude questionnaire (MAQ) that was developed by (Brooks and Ruble, 1980)⁽¹⁴⁾, it includes 33 items involving five subscale; menstruation as a deliberating events, this includes 12 items, menstruation as a bothersome event includes 6 items, menstruation as a natural events includes 5 items, anticipation and predication of the onset of menstruation that is includes 5 items and denial of any effect t includes 7 items. Cronbach's alpha Coefficients were calculated for each factor, it was high; it ranged from (0.77 to 0.99). A Translated Arabic version of (MAQ) was distributed to facilitate more

understanding of the questions that because of the student's native language is originally Arabic. The questionnaire was distributed under the supervision of the investigators and the school nurse to clarify any difficult item and avoid misunderstanding. Validation of the translated Arabic version of the questionnaire was done by the experts in nursing specialties.

Ethical considerations:

An approval was obtained from school authorities. Objective of the study and its implication were explained to both schools administrators and the students. A written consent was obtained from students who were willing to participate in the study and attained menarche. All information is confidential. Students were informed that their participation will be in voluntary basis and it will not affect their grades and evaluation.

Data management and analysis

Data were coded and analyzed using SPSS version 18. Descriptive analyses were conducted to determine the frequency distributions of the study variables. Pearson's Product Moment correlation coefficients were calculated to assess the relationship among the study variables; analysis of variance (ANOV) was also conducted to assess the mean difference among the study variables.

3. Results

Results of the current study are presented in two main sections:

Part 1: descriptive statistics related to the socio-demographic characteristics, knowledge and attitude of the studied sample.

Part 2: relationships among studied variable. Age of the participants ranged from 11 to 18 years with the mean age of 15.45 ± 1.41 and their menarche age ranged from 9-17 with a mean of 12.87 ± 1.29 years.

Regarding to participants knowledge about what is menstruation, more than half of the participants reported that menstruation is event that happens to the girl during puberty, that occurs monthly and spoiled blood the body get rid of it. Forty eight percent of the participants reported that 12-14 years is the age of menarche and half of them reported that menstruation usually associated with pain while (22.5%) reported that it is usually associated with weight gain. Fifty percent of the participants reported that the girl must seek medical advice in case of severe bleeding while 25% of them reported that they should seek medical advice when menstruation is irregular and when menstruation is associated with severe pain this was reported by 21% of them (Table 2). Seventy four

percent of the participants had been informed about menarche before its onset and the mother was the first person informed about menarche (70.5%), followed by friends (14.1%) and sisters (10.1%) (Figure 1,2). Mother was the main source of information about menstruation for 53% followed by grand mother (17%) and media (T.V and internet (24% of participants. (Figure3).

As regards to participants' attitude toward menstruation, the participants slightly agreed that menstruation is a debilitating (4.22 ± 0.83), a bothersome (4.35 ± 1.20) and natural event (4.95 ± 1.32). Furthermore, they slightly agreed that they can anticipate their menstruation (4.25 ± 1.13) and they denied the effect of it (4.28 ± 1.02) as presented in table 2.

Results also indicated that participants who have been informed about menarche before its onset have more positive attitude toward menstruation as a natural event and the difference was statistically significant ($P = 0.027$) as presented in table 2,3.

ANOVA was used in order to identify the relationship between participants' score of knowledge and their attitude with the source of their information and the first person informed about menarche. Significant differences were found between source of information and menstruation as a natural event and prediction of the onset of menstruation ($P = 0.001, 0.021$ respectively). Furthermore, significant differences were also found between the first person informed about menarche and menstruation as a natural event and the total score of attitude scale ($P = 0.001$) as presented in table 5.

The correlation coefficient between participants' age, their age of menarche and the score of knowledge with their attitude was investigated using Pearson correlation coefficient test. It was revealed that participants' age was negatively correlated with their attitude and the correlation was statistically significant ($r = -0.233$ $p \leq 0.05$). Furthermore, participants' age of menarche was negatively correlated with their score of knowledge ($r = -0.179$ $p \leq 0.05$) and their attitude toward menstruation as a debilitating, bothersome, natural event and their ability to anticipate the onset of menstruation and the correlation was statistically significant ($r = -0.280, -0.186, -0.204, \text{ and } -0.145$ respectively $p \leq 0.05$). In addition, it was found that participants' score of knowledge was positively correlated with their attitude toward menstruation as a debilitating, bothersome, natural event, the correlation was statistically significant ($r = 0.293, 0.248, \text{ and } 0.272$ respectively $p \leq 0.05$) as presented in table 6.

Table (1): Distribution of participants according to their knowledge about menstruation

Knowledge about menstruation	N=200	
	No	%
What is menstruation? *		
Event that happens to the girl during puberty	34	17.0
Event that occurred monthly	26	13.0
Spoiled blood the body get rid of it	30	15.0
All of the above	119	59.5
I do not know	5	2.5
Age of menarche		
9 – 11	17	8.5
12 – 14	96	48.0
15 – 16	28	14.0
All of them	41	20.5
I Don't know	18	9.0
Is menstruation associated with		
Pain and abdominal colic	101	50.0
Headache	35	17.5
Back pain	56	28.0
Mood change	30	15.0
Pain in breast	19	9.5
All of the above	18	9.0
I do not know	4	2.0
Is menstruation associated with		
Weight gain	45	22.5
Weight loss	41	20.5
Menstruation has no relation with weight	54	27.0
I do not know	60	30.0
When the girl must seek medical help/or advice		
If the menstruation is irregular	50	25.0
If the menstruation associated with severe pain	42	21.0
In case of severe bleeding	99	49.5
If the menstruation is not spontaneous	35	17.5
I do not know	10	5.0

*Multiple responses

Table (2): Distribution of the participants according to their attitude toward menstruation

	Mean	SD
Menstruation as a debilitating event		
A woman's performance in sports is not affected negatively by menstruation	3.39	2.0
Women are more tired than usual when they are menstruating	4.34	2.05
I expect extra consideration from my friends when I am menstruating	4.12	1.95
The physiological effects of menstruation are normally no greater than other usual fluctuations in physical state	4.20	1.86
Menstruation can adversely affect my performance in sports	4.63	1.79
I feel as fit during menstruation as I do during any other time of the month	3.12	1.91
I don't allow the fact that I'm menstruating to interfere with my usual activities	4.24	1.89
Avoiding certain activities during menstruation is often very wise	4.52	1.84
I am more easily upset during my premenstrual or menstrual periods than at other times of the month	5.06	1.83
I don't believe my menstrual period affects how well I do on intellectual tasks	3.76	1.93
I realize that I cannot expect as much of myself during menstruation compared to the rest of the month	4.53	1.89
Women just have to accept the fact that they may not perform as well when they are menstruating	4.22	0.83
Menstruation as a bothersome event		
Menstruation is something I just have to put up with	4.95	1.88
In some ways I enjoy my menstrual periods	3.28	2.14
Men have a real advantage in not having the monthly interruption of a menstrual period	4.09	2.50
I hope it will be possible someday to get a menstrual period over within a few minutes	4.29	2.12
The only thing menstruation is good for is to let me know I'm not pregnant	4.77	1.87
Menstruation provides a way for me to keep in touch with my body	4.73	1.81
Menstruation as a natural event		
Menstruation is a reoccurring affirmation of womanhood	5.03	1.78
Menstruation allows women to be more aware of their bodies	4.93	1.64
Menstruation is an obvious example of the rhythmicity which pervades all of life	4.86	1.60
The recurrent monthly flow of menstruation is an external indication of a woman's general good health	5.0	1.84
Anticipation and predication of the onset of menstruation		
I can tell my period is approaching because of breast tenderness, backache, cramps, or other physical signs	5.18	1.87
I have learned to anticipate my menstrual period by the mood changes which precede it	4.82	1.84
My own moods are not influenced in any major way by the phase of my menstrual cycle	3.17	2.09
Most women show a weight gain just before or during menstruation	3.82	2.06
Denial of any effect of menstruation		
Others should not be critical of a woman who is easily upset before or during her menstrual period	4.85	1.84
Cramps are bothersome only if one pays attention to them	4.24	2.01
A woman who attributes her irritability to her approaching menstrual period is neurotic	4.28	1.79
I barely notice the minor physiological effects of my menstrual periods	4.19	1.88
Women who complain of menstrual distress are just using that as an excuse	3.49	1.98
Premenstrual tension/irritability is all in a woman's head	4.50	1.75
Most women make too much of the minor physiological effects of menstruation	4.42	1.99

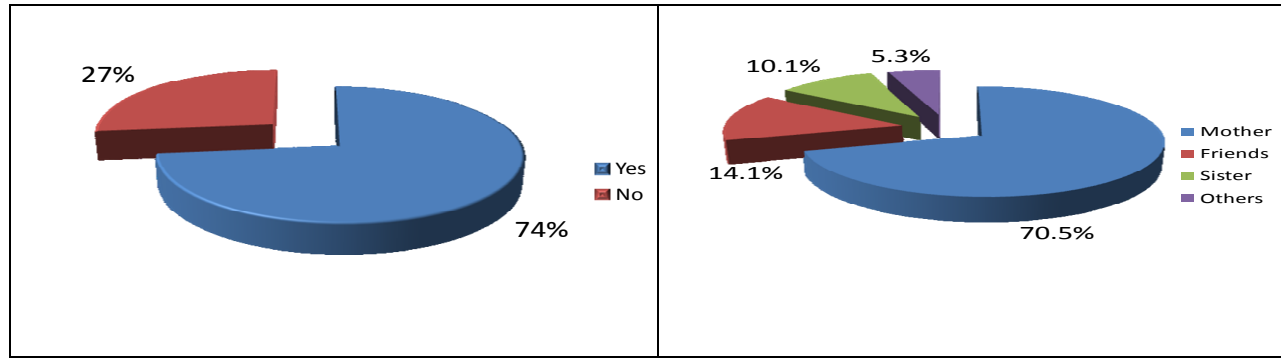


Figure 1: Distribution of participants according to their information about menarche before its onset

Figure 2: Distribution of participants according to the first person they informed about menarche

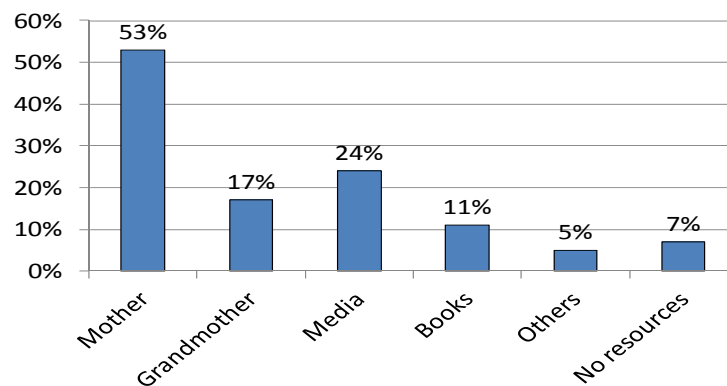


Figure 3: Distribution of participants according to their sources of knowledge about menstruation

Table (3): Distribution of participants according to their scores of attitude toward menstruation

Attitude toward menstruation	Range	Mean \pm SD
Menstruation as a debilitating event		
Total	27.0 – 71.0	50.67 \pm 9.97
Average	2.25 – 5.92	4.22 \pm 0.83
Menstruation as a bothersome event		
Total	11.0 – 41.0	26.10 \pm 7.17
Average	1.83 – 6.83	4.35 \pm 1.20
Menstruation as a natural event		
Total	6.0 – 28.0	19.82 \pm 5.29
Average	1.50 – 7.0	4.95 \pm 1.32
Anticipation and prediction of the onset of menstruation		
Total	4.0 – 26.0	16.99 \pm 4.51
Average	1.0 – 6.50	4.25 \pm 1.13
Denial of any effect of menstruation		
Total	14.0 – 49.0	29.95 \pm 7.13
Average	2.0 – 7.0	4.28 \pm 1.02
Total Scale of attitude		
Total	87.0 – 202.0	143.52 \pm 26.94
Average scale	2.64 – 6.12	4.35 \pm 0.82

Table (4): Relation between participants' who had been informed about menarche before its onset and their attitude toward menstruation

	Yes N=148	No N=52	<i>p</i>
Menstruation as a debilitating event			
Range	1.83 – 6.83	1.83 – 6.33	
Mean ± SD	4.41 ± 1.20	4.17 ± 1.19	0.100
Median	4.50	4.42	
Menstruation as a bothersome event			
Range	1.75 – 7.0	1.50 – 7.0	
Mean ± SD	5.08 ± 1.30	4.61 ± 1.33	0.218
Median	5.38	4.50	
Menstruation as a natural event			
Range	1.75 – 7.0	1.50 – 7.0	
Mean ± SD	5.08 ± 1.30	4.61 ± 1.33	0.027*
Median	5.38	4.50	
Anticipation and prediction of the onset of menstruation			
Range	1.0 – 6.50	1.50 – 6.25	
Mean ± SD	4.29 ± 1.13	4.13 ± 1.12	0.383
Median	4.50	4.25	
Denial of any effect of menstruation			
Range	2.14 – 7.0	2.0 – 6.14	
Mean ± SD	4.32 ± 1.02	4.16 ± 1.0	0.327
Median	4.29	4.14	
Average scale of attitude			
Range	2.64 – 6.12	2.70 – 5.45	
Mean ± SD	4.41 ± 0.81	4.18 ± 0.82	0.075
Median	4.59	4.23	

p: *p* value for Student t-test*: Statistically significant at $p \leq 0.05$ **Table (5):** Relation between participants' score of knowledge and their attitude with the source of their information and the first person informed about menarche

Score of knowledge and attitude toward menstruation	Source of information	of First person informed about menarche
	<i>p</i>	<i>p</i>
Score of knowledge	0.246	0.017
Attitude toward menstruation		
Menstruation as a debilitating event	0.376	0.016
Menstruation as a bothersome event	0.116	0.005
Menstruation as a natural event	0.001*	0.001*
Anticipation and prediction of the onset of menstruation	0.021*	0.060
Denial of any effect of menstruation	0.371	0.061
Total scale of attitude	0.100	0.001*

p: *p* value for F test (ANOVA)*: Statistically significant at $p \leq 0.05$

Table (6): Correlation between age, age of menarche and the score of knowledge with subscales and the total scale of attitude

	Age		Age of menarche		Score of Knowledge	
	r	p	R	p	r	p
Menstruation as a debilitating event	-0.195*	0.006	-0.280*	< 0.001	0.293*	< 0.001
Menstruation as a bothersome event	-0.171*	0.016	-0.186*	0.008	0.248*	< 0.001
Menstruation as a natural event	-0.181*	0.010	-0.204*	0.004	0.272*	< 0.001
Anticipation and prediction of the onset of menstruation	-0.150*	0.034	-0.145*	0.041	0.128	.072
Denial of any effect of menstruation	-0.208*	0.003	-0.093	0.192	0.120	.090
Total scale of attitude	-0.233*	0.001	-0.242*	0.001	0.281*	< 0.001
Age			0.269*	<0.001	-0.110	.122
Age of menarche					-0.179*	.011

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

4. Discussion

The aim of the current study was to assess the attitude and knowledge toward menstruation among Egyptian female adolescents. Menarche is an important milestone in the life of a girl as this signifies the fertility of a woman. Age of menarche was found in the studied adolescents to range from 9-17 years with a mean of 12.87 ± 1.29 years. This finding was nearly in the same range that was found by **Lu (2001)**⁽¹⁵⁾ in Taiwan females, and in a recent study conducted in Egypt (**Yassin, 2012**) and (**Abd El-Hameed, 2011**)^(16,17) but lowers than a study done in Nigeria (14 years) (**Moronlola, 2006**)⁽¹⁸⁾, in Riyadh study (13.1 years) (**Fetohy, 2007**)⁽¹⁹⁾. This may be attributed to the differences in socioeconomic status, environment and food habits in different countries.

Regarding to the participants knowledge about what is menstruation, the present study revealed that more than half of the participants reported that menstruation is event that happens to the girl during puberty, occurs monthly and spoiled blood the body get rid of it. Forty eight percent of the participants reported that 12-14 years is the age of menarche. These results are in accordance with an Indian study done by **Nagar, 2010**, showing that many of the adolescents (42%) agreed that menstruation is unclean/dirty/bad blood while the rest thought it as a monthly process⁽²⁰⁾. A study by **Kalam and Rajalakshmi (2005)** also found that majority of girls had to know knowledge of menstruation, its onset, the reasons for irregular periods and what to do for discomforts during periods⁽²¹⁾. On the same line the majority of adolescent's school girls in Nigerian study (**Lawan, 2010**) had fair knowledge about menstruation. This result coincides with those of other studies which revealed a great lack of knowledge about the physiological aspects and psychology of menstruation. Such lack of knowledge was attributed to lack of either formal or informal pre-menarche preparation⁽²²⁾.

Regarding the associated symptoms to menstruation half of the adolescent in the present study

reported that menstruation is usually associated with pain while 22.5% of them reported that it is usually associated with weight gain, however **Nagar (2001)** mentioned that the majority of headache⁽²⁰⁾ the Indian adolescents reported pain in lower abdomen (97%) and backache (89%) as the highest symptoms followed by weakness/tiredness (82%), body ache (55%), pain in thighs/legs (44%), and 31% for . This difference can be attributed to the cultural differences between the two samples. The results of this study also revealed that 21% of the studied Egyptians adolescents reported that when menstruation associated with severe pain the girl must seek medical advice; this result is nearly in the same line with a study conducted in Tehran by **Poureslami 2002**⁽²³⁾.

Girls tend to receive information about menstruation from a variety of sources including parents, school, friends, and the media. Despite the several sources of information, girls often report that the education they receive is insufficient in preparing them for menstruation. Current educational practices often present girls with primarily biological information such as the role of the ovarian and menstrual cycles in reproduction⁽²⁴⁾. The most common source of information for the studied sample was the girl's mother. Traditionally, education about menstruation and puberty was a part of the maternal role. Several studies demonstrated that mothers were also the main source of information. In an Indian study, 60.7% of adolescents were informed by their mothers and 37.2% of Indian girls had not been informed about menarche before its onset. 85% of American adolescents mentioned knowing information about menstruation from their mothers⁽²⁵⁻²⁷⁾. In Egypt, in Mansoura, a study conducted by (**El -Gilany 2005**) found that 92.2% of the girls reported mass media as their source of information followed by mothers (45%)⁽²⁸⁾.

Menstrual attitudes, whether positive or negative, can influence a girl's ability to assume her role as a woman. **Whisnaw and Zegans (1975)** studied

the attitude towards menarche in white middle class American girls, they reported that girls had learned about menstruation from friends, commercial booklets, schools and their parents, especially their mothers. They perceived themselves as being knowledgeable about menstruation and used appropriate terms; however, their knowledge of female anatomy was poor. Therefore, despite their access to information about menstruation, the girls had not assimilated it well; they were most concerned about what to do when they got their periods and many had mentally rehearsed what they would do in a variety of situations⁽²⁹⁾.

Most researches on menstrual attitudes used the Menstrual Attitude Questionnaire, examining different groups of women's reactions to attitude subscales. A common thread across these studies is the tendency for women to report negative attitudes toward menstruation⁽³⁰⁾. Cultural, social and family environment influence women's beliefs and attitudes toward menstruation. Awareness of these beliefs and attitudes is necessary to understand the female adolescents and their reactions to menstruation when offering health care. The present study results revealed that the mean score of the Menstrual Attitude Questionnaire was 4.35 ± 0.82 out of seven, showing more tendencies toward positive attitude among Egyptian female adolescents. There was however ethnic differences observed on the attitudes towards menstruation. A more positive attitude (higher scores on MAQ) was reported among American and British than Indian⁽³¹⁾. In two studies conducted in Asia the results showed the mean scores on the MAQ to be 2.80 ± 1.88 out of six in Malaysia, and the mean score on the MAQ was 1.88 ± 0.36 out of 4 in Taiwan^(32,33).

Regarding the factors affecting the adolescents' knowledge and attitude, the results of the present study revealed that participants' age of menarche and their age were negatively correlated with their attitude toward menstruation; this finding is in congruent with studies shown that younger women have more positive attitudes towards menstruation and are more likely to perceive it as a natural process. The effect of obtaining proper knowledge about menstruation on the girls' attitude was proved by several researchers as they found that girls who report being adequately prepared have more positive initial experiences with menstruation⁽³⁴⁻³⁶⁾. The result of the present study highlighted the same idea as it was found that participants' score of knowledge was positively correlated with their attitude toward menstruation. Good preparation for menstruation coupled with positive menarche experience would be related to more positive adult menstrual attitudes, experiences, and behaviors.

Limitations of the study

The estimated sample size was three hundred and fifty, however, there were a lot of missing data and

the total complete responses that were received are 200. This small sample size makes it difficult to generalize the findings to all Egyptian female adolescent knowledge and attitude toward menstruation.

5. Conclusion and Recommendations

Egyptian female adolescents have knowledge and attitude that is quiet different than other societies and countries, this may be attributed by cultural differences. Egyptian female adolescents were influenced by their mothers as they were the main source of information, followed by mass media, this may consequently affected their knowledge and attitude toward menstruation. Knowledge that preceded menstruation is one of the important factors that affected Egyptian female adolescent's attitude toward menstruation.

Based on the study findings, the following were recommended:

- Providing female adolescents with the proper knowledge related to the physical and psychological aspects of menstruation before menarche age.
- Development of a comprehensive school health education program and inclusion of menstrual physiology in the school's curricula.
- In addition, at the community level, the mothers of young girls should be educated about the appropriate puberty hygiene, and be empowered with the necessary skills to communicate with and transfer the obtained information to their children.
- Mass media should have an active role in raising the awareness of adolescent's flames about the physiological, psychological aspects of menstruation and the proper hygiene as well to avoid reproductive health problems.
- Further study to investigate the relationship between adolescent's knowledge and practices during menstruation.

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Corresponding author:

Dr. Abeer Saad Zaghoul Eswi, Maternity Nursing Department, Faculty of Nursing, Cairo University, Egypt

E-mail: drabeersaad@hotmail.com

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