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Knowledge, Attitudes and Practices (KAP) Regarding Menstruation among School Girls in West of Iran: A Population Based Cross-Sectional Study

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Abstract

Background

Menstruation is a challenging situation for young women in whom a poor hygiene practice can result in infertility and reproductive system diseases. Attitude and knowledge are two factors related to each other, and reflected in people's practice. This study aimed to assess the KAP, and their association among teenage girls in Western Iran**.**

Materials and Methods

A cross-sectional study of 728 girls, selected randomly among 28,370 school girls studying in classes 7^{th} (12y) and 10^{th} (15y) was conducted in 2016, in Kermanshah, West of Iran. A self-made questionnaire was used to gather data including participants' demographic characteristics and their KAP toward menstruation. Using SPSS software (version 23.0) the relationships between outcome variables and predicting variables were evaluated.

Results

Participants' mean age and menarche age were (14.6±1.4 years), and (12.5±1.0 years), respectively. About 92% were found to have a relatively positive attitude, 64% had a poor knowledge and 81% expressed a poor practice toward menstruation. Mothers (37.4 %) were the main source of information for most participants. Age (r=0.360), family income (r=0.186), and the source of information (r=0.112) were significantly positively associated with their level of knowledge. Participants 'practice regarding menstruation was significantly associated with age and mother's education ($P \leq 0.05$).

Conclusion

Although the total attitude of school girls in terms of menstruation was at a relatively positive level, mostly had poor knowledge and practiced poor. Given the poor level of knowledge and practice, school girls in Western Iran need to be trained regarding menstruation hygiene and developing their skills to care for themselves during menstruation periods.

Key Words: Adolescent; Attitude; Iran; Knowledge; Menstruation.

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1- INTRODUCTION

Adolescence, a transition period from childhood to adult, is a critical stage affecting in the physical, sexual and psychosocial dimensions (1, 2). According to the World Health Organization (WHO), the age group of 10-18 years is considered as adolescents (3). During this period, pubertal development and sexual maturation following hormonal changes get completed. Menarche is the final step in which menstruation periods start (2, 4). This can occur a time between 11 and 16 years of girls' age, by average 12.5 years for Iranian girls. Menstruation or menstrual cycle, a set of periodic monthly physiologic vaginal bleeding, is the shedding of the uterine mucosa under the control of endocrine hormones of the hypothalamus-pituitary axis (5-7).

In overall, a woman in her reproductive ages (15-45 years old) menstruates on the average of 3-5 days per mount or more (8). During vaginal bleeding, the uterine osseous is open and ready to accept bacteria coming from vagina and conduct them to the uterus body and fallopian tube resulted in infectious. Very young girls are a vulnerable group to be involved in reproductive system infectious because of their lack of health information, social immaturity and physical status (9). Many of them, especially in developing countries, lack correct or sufficient information toward the process of menstruation, as well as the physical and psychological changes and menstrual hygiene resulted in the bad consequences like unhealthy behavior, negative body image, vulnerable to reproductive tract infections (RTI) and pelvic inflammatory diseases (PID), infertility, anxiety, lowered self-esteem, etc. (7, 10).

Depending of the sources of information used by young girls they can or cannot follow a healthy manner regarding their menstrual period hygiene. Media, internet, friends and relatives, mothers in particular, can play an essential role in providing correct information for very young girls (11). It is estimated that 40% to 45% of female adolescents in the world are suffering from menstrual adverse effects, the majority due to psycho-social stress and emotional changes (12). In fact, young girls with better knowledge and practice toward menstrual hygiene are less vulnerable to adverse health outcomes (13, 14). Normally, a culture of silence surrounds the menstruation and related issues, especially in less developed countries (15, 16), cannot help young women to manage their menstruation. Even after experience menarche, very little information is given to adolescence in such culture. In the worst situation, menstruation and menstrual hygiene are still shadowed by taboos, cultural and social restrictions, myth, and misconceptions resulted in embarrassing girls, and preventing them to seek for information and even hiding their menstruation because, during menstruation, they must be separated from the others (17, 18); showing the importance of culture in presenting negative attitudes towards menstruation limitation of health information and facilities (19). In Western Iran, with a particular culture, a combination of traditional beliefs, religious and language, few researches have been seeking for young girls' practice regarding menstruation hygiene. Therefore, the current study was conducted aiming to examine the KAP toward menstruation, and the other likely associated factors, among teenage girls (late and early high school) in Western Iran.

2- MATERIALS AND METHODS

2-1. Setting

Kermanshah, in Western Iran, population 1,952,433 (183593 female students), is a capital city with many disadvantaged people. Recently, Kermanshah has been pioneers in

improving cared-for female especially teenage girls. More than 2,230 girl schools educate female students, therefore, a good setting for our study (This information was based on the statistical database of the population clusters from Kermanshah which were prepared by the Statistical Centre of Iran in Tehran).

2-2. Study design and Sampling

Seven hundred and twenty eight female students studying in classes 7th and 10th were selected to participate in this cross-sectional study. Based on similar previous study reporting 54% participants had a good knowledge (20), and using a confidence level of 95% and marginal error of 5%, the computed sample size was 666. However considering 20% nonresponse, consequently a sample size of 728 was considered appropriate. To select the participants, a three-step sampling technique: cluster sampling, proportional and randomization was used. First, 20 high schools (each one a cluster) were randomly selected among 115 girl high schools. Then, sample size for each high school was considered. This was based on its population coverage (the number of students studying there). In the last stage, the female students studied in classes 7th and 10th were selected randomly using Excel randomization.

2-3. Inclusion and Exclusion criteria

Students who met the following criteria were selected to be participated. Inclusion criteria were: being studying in classes 7^{th} and 10^{th}, aged from 12 to 16 years; were unmarried; and participation in the study was voluntary. Participants were excluded from the study if they did not formally consent to participate.

2-4. Instrument used for data collection

The female students signed consent forms, were interviewed separately by two trained interviewers using a questionnaire designed based on the study's aims. The validity and reliability of questionnaire was evaluated and approved, using a pilot study with 40 female students with (characteristics was the same) (Chronbach alpha=75%) and gaining expert opinions, including from two midwives and three family counselor. The questionnaire comprised three parts:

A. Socio-demographic information: age, parent's education, people per family, birth order, family income, and property ownership.

B. Menstruation status, including menarche age, emotion toward the first menstrual period, awareness about menarche before getting menses, sources of information about menses, and restrictions during menstruation.

C. KAP toward menstruation (15, 23, and 18 questions, respectively).

Questions associated with attitude are scored based on a Likert scale from 0 to 5, completely disagree to completely agree. Participants scored 0-57.5 points of attitude were defined as having negative attitude; whereas those scored 57.5-86.25 and $\geq$ 86.25 were adjudged as having mediocre (relatively positive) and positive attitude respectively. Questions related to knowledge and practices had multiple options to choose and some other with yes or no. In scoring the students' knowledge and practice, an arbitrary scoring system was used. Each correct response attracted one point, whereas any wrong or don't know answer received no mark. Respondents scored 0-7.5 points under knowledge were determined as having poor knowledge; whereas those scored 7.5 to 11.25 and $\geq$11.25 were adjudged as having fair and good knowledge respectively. Similarly those who scored 0 to 9 points, 9 to 13.5 points and $\geq$13.5 under practice were assigned as having poor, fair and good practice, respectively. To complete the questionnaires, we

contacted the administrative staff in each school to identify available times that we could distribute and complete the questionnaires among selected students. Then, the eligible students signed consent forms, were interviewed separately by two trained interviewers (public health students of bachelor degree) after we explained the main objective of the study. The interviewers had been trained to ensure that the students completely realized their words. Plus, students were helped by the interviewers if they faced with difficulties.

2-5. Data analysis

Data analysis was performed using statistical package for social sciences (SPSS) (Version 23.0; IBM Corporation, Chicago, USA). Variables with normal distribution such as age and menarche age were described as mean ± standard deviation (M±SD). The one-way ANOVA test was used to compare the mean score for KAP of students in different socio-demographic levels. Spearman correlation analysis was applied to evaluate the correlation between KAP and possibly explanatory factors. A probability value (p-value) of less than 0.05 was considered statistically significant.

2-6. Ethics approval

The Research Ethics Committee of the Deputy of Research of the Kermanshah University of Medical Sciences (KUMS) approved the study protocol. Students had been given adequate information about purpose of study, and had signed the written consent form. Individual personal information was kept confidentially.

3- RESULTS

In the current study, KAP toward menstruation among teenage girls, in Kermanshah, West of Iran, were explored. A total of 728 female students studying in classes 7^{th} and 10^{th} who were included in this study, responded the study question with a rate of 100% **(Table.1)**. Six hundred and ninety eight participants (95.9%) had experienced menarche before the study. Most of the girls were in the age group 15-16 years (70.3%) followed by 12-13 years (29.7%). The mean ± standard (M±SD) age and their menarche age were 14.64 ± 1.35 years and 12.54 ± 1.01 years, respectively. Mothers (38.6%) and fathers (44.8%) of most respondents had completed high school and university degree, respectively. Most family size was 5 ≤ (54.6%). Three hundred and four (41.8%) were the first birth. The mean income was 14,527,100±11,498,900R (Iranian Currency= 320$US) with a median of 15×10^6 R per mount. About 64.8% of the households were tenant and 32.7% were owner **(Table.1)**.

Table-1: The socio-demographic information of school girls participated in the current study, Western Iran (n=728).

Characteristic	Sub-group	Number (%)
Age (year)	12-13 (or 7^{th} grade) 15-16 (or 10^{th} grade)	216(29.7) 512(70.3)
Mother's education	Illiterate Primary/guidance school High school University degree	27(3.7) 179(24.6) 281(38.6) 241(33.1)
Father's education	Illiterate Primary/guidance school High school University degree	27(3.7) 123(16.9) 252(34.6) 326(44.8)
People per family	4≥ 5≤	331(45.4) 397(54.6)

Birth order	First Second Third Forth ≤	304(41.8) 228(31.3) 131(18.0) 65(9.7)
Economic statuses	Weak Average Good Very good	134(18.4) 325(44.6) 183(25.1) 86(11.8)
Property ownership	Owner Tenant Other	238(32.7) 472(64.8) 18(2.5)
Total		728(100.0)

In 94.0 % participants the menses had started sometime between the ages of 10 to 14 years old. About 22.0 % of participants had experienced being discomfort or fearful at the time of first menstruation, 20.1% had felt embarrassment/shame, 8.9% had anxiety and just 7.2% had a sense of comfortable. A bout 78% (569/728) had been aware of getting menses before its onset. The mothers were the main source of information for 37.4% this was followed by teachers by 16.1%, and friends/ peers by 14.8. Four hundred twenty eight (58.8%) of participants faced restrictions during menstruation for household work /attending family function, 239 (32.9%) for schooling; while 272 (37.4%) subjects did not face any such restrictions **(Table.2)**. More than half of the girls perceived menstruation as a 'dirty blood', 300 people (41.2%) understood that menstruation is a normal physiological process in women. Fifteen participants (2.1%) assumed that menstruation is for cleansing women's womb. However, 1.6% of girls viewed menstruation as an evil or a bad punishment from gods or nature imposed women.

Table- 2: Menstrual information of school girls participated in the current study, Western Iran (n=728).

Characteristic	Sub-group	Number (%)
Menarche Age (year)	10-12 13-14 15-16	341(46.9) 340(46.7) 20(2.8)
Emotion toward the first menstrual period	Embarrassment Anxiety Discomfort/Fear Comfortable None	146(20.1) 65(8.9) 159(21.9) 52(7.2) 278(38.2)
Awareness about menarche before getting menses	Yes No	569 (78.2) 129(17.7)
Sources of Information	Mother Elder female sibling Teacher Friends Other	272(37.4) 42(5.8) 117(16.1) 108(14.8) 37(5.1)
Restrictions during Menstruation	Schooling Household work Physical activity/playing No Restrictions at all	239(32.9) 428(58.8) 141(19.4) 272(37.4)
Total		728(100.0)

Table.3 shows the details regarding respondent's knowledge, attitude, and practice toward menstruation and menstrual hygiene. In 464 (63.7%) participants, knowledge of menstruation was poor, and only 12 (1.6%) had a good knowledge. Also, about 81.0% of participants have presented a poor practice on menstrual hygiene. The attitudes of 673 (92.4%) people toward menstruation were almost moderate, not negative but not enough to be consider as positive **(Table.3)**.

Table-3: Knowledge, attitude and practice of school girls toward menstruation, Western Iran (n=728).

Characteristic	Knowledge Number (%)	Attitude* Number (%)	Practice Number (%)
Poor	464(63.7)	16(2.2)	590 (81.0)
Fair	224(30.8)	673(92.4)	108(14.8)
Good	12(1.6)	11(1.5)	1(0.1)
Missing data	28(3.8)	28(3.8)	29(4.0)
Total			728(100.0)

*For Attitudes being positive, mediocre and negative was used instead of terms used here.

Table.4 presents the factors that were tested to explore their associated with the participants' knowledge, attitude, and practice toward menstruation. Age, family income and sources of information were significantly positively associated with better menstrual knowledge ($P \leq 0.05$). Menstrual practice was significantly associated with age and mother's Education ($P \leq 0.05$) **(Table.4)**.

Table-4: Factors affecting on school girl's knowledge, attitude, and practice toward menstruation.

Factors		Knowledge (Mean ± SD)	Attitude (Mean ± SD)	Practice (Mean ± SD)
Age, (year)	Early adolescence	7.55±2.11	73.10±7.14	6.20±2.07
	Late adolescence	6.25±2.20	72.67±7.11	5.77±1.56
	P- value (ANOVA)	0.001	0.482	0.002
	Spearman coefficient (ρ)	0.360	-0.016	0.210
	P- value*	0.001	0.676	0.002
Menarche age, (year)	10-12y	6.56±2.22	72.81±7.29	5.86±1.66
	13-14y	6.62±2.31	72.79±6.90	5.89±1.77
	15-17y	6.60±2.27	72.30±8.17	6.50±1.71
	P- value	0.698	0.952	0.231
	Spearman coefficient (ρ)	0.024	-0.140	0.023
	P- value*	0.523	0.720	0.539
Mother's education	Illiterate	6.48±2.06	73.37±5.96	5.11±1.45
	Primary/guidance school	6.38±2.23	73.05±6.87	5.78±2.14
	High school	6.55±2.17	72.35±7.60	5.90±1.52
	University degree	6.83±2.43	73.03±6.83	6.04±1.54
	P- value	0.247	0.631	0.028
	Spearman coefficient (ρ)	0.066	-0.009	0.202
	P- value*	0.079	0.812	0.007
Family Income, (Rial)	Weak	6.77±2.04	73.91±8.57	5.80±2.20
	Average	6.31±2.23	73.55±6.93	5.87±1.56
	Good	6.73±2.29	72.31±6.37	5.82±1.84
	Very good	7.24±2.43	72.91±6.37	6.25±1.90
	P- value	0.004	0.225	0.202
	Spearman coefficient (ρ)	0.186	-0.063	0.059
	P- value*	0.040	0.095	0.120

Sources of information	Mother	6.76±2.41	72.76±6.59	6.12±1.73
	Elder female sibling	5.95±3.47	72.40±6.66	5.66±1.43
	Teacher	7.00±2.13	73.60±7.04	5.80±2.03
	Friends	6.15±2.27	72.40±6.89	5.81±1.37
	P- value	0.014	0.508	0.192
	Spearman coefficient (ρ)	0.112	-0.020	-0.070
	P- value*	0.044	0.639	0.092

SD: Standard deviation.

4- DISCUSSION

The current study examined KAP toward menstruation among teenage girls, in Kermanshah, West of Iran. In general, the total attitude in terms of menstruation was at a relatively positive level (92.4%); however, majority had poor knowledge of menstruation and menstrual hygiene (63.7%), consequently, practiced poor in this regard (81%).

4-1. Comparison of our results with other studies

Waldelen and colleagues from Brazil have reported 57.6% participants had poor knowledge of menstrual hygiene (21). Research conducted with adolescents in Lebanon showed that 89.5% practice poor in term of menstrual hygiene in 2013 (22). Similarly, Sedghi Sabet et al. work conducted in Guilan, another state of Iran with relatively different culture from Kermanshah, showed 54.1% had poor practice toward menstrual hygiene (23). Likewise, a study conducted among adolescent school girls by Najafi et al. in 2012, about 56% girls had a relatively positive attitude (23). However, many other researchers reported a better KAP toward menstruation than ours. A study conducted by Shaikh et al. from Pakistan showed 58% people were knowledgeable about menstrual hygiene in 2006 (25). Similarly, study done in Tehran, the capital city of Iran, the favorable KAP were 51%, 55% and 57% respectively; according to Alavi et al. 2009 (20).Likewise, Abioye-Kuteyi and colleagues from Nigeria have reported majority (60%) had appropriate knowledge about their menstrual period and, therefore, practiced well in this regard (26). In this study, although majority had poor knowledge of menstrual hygiene and practiced poor in this regard; but 78% participants reported they were aware about menstruation before menarche. Previous studies conducted by Musa et al. (27) and Sharma et al. (4) have reported similar results. Moreover, the mother was the main provider of information about menstruation and related issues for most participants (37.4%). This finding was consistent with those of other studies. Sarkar and colleagues from Bengal have reported mother was the major source of information about menstruation (28). In Agoyi et al. survey conducted in Nigeria, reported mother was the main informants for most participants (29). Also, in a study conducted by Santra, mother were the first source of information in 53.1% of girls in 2017 (30). This might be due to social restrictions; teenage girls prefer to talk about sexuality issues like menstruation at their family mostly mothers. Regarding menarche age, our findings were in line with previous findings (9, 23, 31), and are quite similar to the results come from Alavi and colleagues who found that the mean age of menarche of their respondents were 12.6 years old (20). As described by Girod et al. (32), Rabiepoor et al. (33), and Shrivastava et al. (34), we observed that many had experienced being fearful or shame at the time of first menstruation. This might be because of eastern traditional culture and Islamic rules in Iran, many females are too shame to call their needs, consequently they have experienced fear and shame at their first

menstruation. In the present study, the most common restriction was restricted from schooling. Our results are consistent with the findings of study conducted by Ul Alam (35), which have observed that menstrual problems restricted the school performance. Conversely, Bachloo work conducted in Ambala Haryana, India in 2016, showed restrictions during menstruation for household work /attending family function was main restriction (36). Another key finding in the current study was that many faced restrictions during menstruation for doing household work. Only 272 (37.4%) participants did not face any such restrictions. Previous study conducted in Delhi indicated that 70% of girls were restricted from participating in household activities (37). Likewise, a study conducted in Lebanon by Santina and colleagues, illustrated one out of five were restricted from doing household work (22). Conversely, in another study conducted in Wardha-India revealed that majority did not attend religious functions during menstruation period (13).

The results of the current study demonstrated that source of information, participant's age, and family incomes were significantly positively associated with better menstrual knowledge. These results are consistent with the findings of Aniebue et al. (38) who showed those whose mothers were their main source of information were most likely to have had better menstrual knowledge. It might be explained by the possible effect of education received at home on reducing the negative impact of harmful environmental factors. The current study showed that the participants in the early adolescent age group (12-13 years) had a better knowledge toward menstruation comparing their counterparts in the late adolescent group (15-16 years); although, some researchers reported converse results. An earlier study conducted in Mumbai-India has reported that elder adolescent have statistically better knowledge about menstruation as compared to their peers in early adolescent group (34). Likewise, by contrast, in another study conducted in Oyo state, Nigeria, elder age was statistically independent positive predictors for better menstrual knowledge (39). Similarly, Santina et al. (22) reported that family income has a positive association with better menstrual knowledge. This study showed that menstrual practice was significantly associated with age and mother's education. Interestingly, we found that the higher level of mother's education was directly related to more favorable practice. This finding is in consistence with the findings of previous studies conducted by Santina et al. (22) and Alavi et al. (20) in which similar relationships have been described. The participants in the early adolescent age group (12-13 years) had a better practice about menstruation in comparing to the late adolescent group (15-16 years) (27).

4-1. Limitations of the study

The present study should be regarded with several limitations providing a guide for future studies. Firstly, we used self-reported data to examine KAP toward menstruation among adolescent school girls; these types of data may have a lower accuracy rather than observational methods. Secondly, some further analysis directed to the associations did not apply due to the cross-sectional nature of the study design. Future studies, a longitudinal study using larger sample sizes and including mothers along with adolescent girls in particular, would be recommended.

5- CONCLUSION

In conclusion, although students' attitude toward menstruation was relatively positive; they mostly had a poor knowledge about menstrual hygiene; consequently, a poor practice was

expected. Hence, health care providers and health educators should focus on the education programs and also coverage of sexuality issues like menstruation in school and college curricula. Also, the results indicated that students' mothers were the main source of their information on mensuration. Therefore, their mothers need to be equipped with correct and sufficient information as well as communication skills. Overall, school girls in western Iran need to be trained regarding menstruation hygiene and developing their skills to care for themselves during menstruation periods.

6- CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest. The authors express that they have no financial interest related to the material in the manuscript.

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