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Knowledge, Attitude, and Practice towards Menstrual Hygiene Management among Adolescent School Girls in Sulaymaniyah City/Iraq

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ABSTRACT

Background: Menstrual hygiene management (MHM) remains a significant public health challenge for adolescent girls in many communities. Despite its importance for reproductive health and overall well-being, many girls lack adequate information, resources, and supportive environments to manage menstruation effectively. MHM being crucial for adolescent girls' health, gaps in knowledge and practices persist among schoolgirls across different educational levels. **Objectives:** The objective of the study was to assess knowledge, attitude, and practices (KAP) regarding MHM among adolescent schoolgirls across different grades as well as to find out the association between sociodemographic characteristics with KAP scores. **Methods:** A quantitative descriptive analytic (Cross-sectional study) was conducted with 432 adolescent girls across different grade levels, The data collection started from November 20, 2024, to February 10, 2025, using an interviewed questionnaire. **Results:** Among participants, 45.8% had poor knowledge, 31.5% had negative attitudes, and 42.6% demonstrated poor practices toward MHM. KAP scores were significantly associated with age, class level, parental education, and maternal occupation ($P < 0.05$). **Conclusion:** The findings indicate a need for comprehensive menstrual health education programs targeting adolescent girls, particularly in lower grades, to improve MHM and address the gaps in KAP.

Index Terms: Menstrual Hygiene Management, Adolescent Girls, Knowledge, Attitude, Practice

1. INTRODUCTION

Globally, menstrual hygiene management (MHM) is essential for adolescent girls' health and well-being, though it often receives insufficient attention. The beginning of menstruation (menarche) constitutes a major physical and psychological milestone that necessitates proper understanding and hygiene practices to ensure good health [1].

Despite being a normal biological process that starts in puberty for females, menstruation is nevertheless stigmatized, misunderstood, and poorly understood in many cultures [2]. The procedures by which women and adolescent girls absorb menstrual blood using clean materials, change these materials as needed in private, and have access to facilities for disposal and cleaning are referred to as (MHM) [3].

The health, education, and psychological well-being of teenage girls can all be significantly impacted by poor MHM.

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Most of the girls have minimal knowledge until faced their first experience because menstruation is not frequently addressed in homes [4].

A study done in 2016 emphasizes that families, especially mothers, play a key role in supporting girls through puberty by providing education, information, and guidance on health practices. The practice involves several aspects, including the selection and changing frequency of absorbent materials, personal hygiene, and the maintenance of reusable menstrual products [5].

According to recent research, MHM-related issues are still prevalent throughout the world, because educational institutions lack proper water and sanitation facilities, girls around the world routinely miss school during their menstrual cycles [6].

With greater international dedication and cooperation to address MHM challenges, the menstrual health paradigm has changed dramatically in recent years [7]. However, offering menstruation products without sufficient instruction frequently do not result in long-lasting improvements in MHM behaviors; young women require thorough education on menstruation, including biological details and useful coping mechanisms [8].

Even while MHM is receiving more and more attention on a global scale, there is still a big knowledge gap. According to Ahmed *et al.* (2022), social, economic, and infrastructure hurdles prevented adolescents from constantly putting their theoretical understanding of optimal MHM into reality [9].

There is potential for educational interventions to enhance MHM outcomes. A randomized controlled experiment by Phillips-Howard *et al.* (2015) showed that comprehensive school-based instruction including product provision enhanced menstrual health awareness by 42% and decreased school absenteeism by 37% [10].

Research suggests that parents' educational background, especially the mother's education and occupation, plays a crucial role in shaping girls' understanding and management of menstruation. Furthermore, having access to information about menstruation before experiencing first menstruation has been linked to improved menstrual hygiene practices [11]. A study done in Gaza reveals that mothers are the primary source of menstrual information for adolescent girls, with fair knowledge about menstruation and better knowledge about hygiene practices. Most girls use sanitary napkins and practice good hygiene, though school facilities often lack essential supplies. Knowledge and attitudes improved with age, with older students demonstrating better understanding than younger ones [12].

While the significance of (MHM) is increasingly acknowledged, researchers still lack a comprehensive understanding of how knowledge, attitudes, and practices (KAP) interact among adolescent girls of various ages and educational backgrounds [13]. This research seeks to assess adolescent schoolgirls' KAP concerning MHM and determine which socio-demographic factors affect these elements.

2. MATERIALS AND METHODS

2.1. Study Design and Population

A quantitative descriptive analytic (Cross-sectional study) was employed. The target population comprised of all adolescent school girls in the age group from 12 to 19 years old that represent grades seven to 12 in the governmental high schools in the Sulaymaniyah City. This study was applied to eighteen governmental high schools. They were randomly selected from the two directorates of Education (East and West) in Sulaymaniyah City.

2.2. Sampling Procedure

This study employed a multistage cluster sampling technique for data collection. In the first stage, a stratified sampling method was used to select 18 schools from the total high schools in Sulaimani City. Specifically, nine schools were chosen from the West Directorate of Education and 9 from the East Directorate of Education. To ensure unbiased selection, the schools were first randomly rearranged. Simple random sampling was then applied, giving each school an equal chance of being selected. The study sample consisted of 432 participants who were surveyed about KAP toward MHM among Adolescent School Girls in Sulaymaniyah City.

2.3. Inclusion and Exclusion Criteria

Adolescent school girls included aged 12–19 years who had menstrual flow experience for at least 6 consecutive menstrual cycles and willing to participate, as for the exclusion adolescent school girls attending primary schools and those who were critically ill and incapable of providing informed consent including (physically, mentally and psychologically), as well as adolescent school girls that had communication disabilities and those who were absent at the time of study.

2.4. Data Collection

The data collection was conducted through interviews with adolescent school girls using a standardized questionnaire

developed from a comprehensive literature review [14]–[16]. The questionnaire was structured into multiple sections beginning with participants' sociodemographic information and detailed menstrual history including challenges faced. Knowledge assessment about MHM featured 13 items covering menstruation basics, menarche age, menstrual blood source, sanitary pad usage, and infection prevention. Attitudes toward MHM were evaluated through 15 items on a 5-point Likert scale, addressing personal attitudes, social environment responses, and management of underwear and pads. MHM practices were assessed via 11 items examining pad type preferences, genital hygiene maintenance, showering habits, and how menstruation affects school attendance.

The data collection started in November 20, 2024, and end in February 10, 2025. After obtaining necessary ethical approvals and permissions from school administrators, participants were selected using stratified random sampling. From each grade level, eight students were randomly selected to ensure appropriate representation across educational stages. Selected participants were assembled in a separate classroom to maintain privacy and confidentiality during data collection. The self-administered questionnaires were distributed to all participants simultaneously, with clear instructions provided regarding completion procedures. The researcher remained present throughout the data collection session to address any queries or provide clarification as needed. Special attention was given to seventh-grade participants, who were provided with additional explanations and support due to their potentially limited familiarity with menstrual health concepts. All participants were informed that assistance was available if they encountered difficulty understanding any questionnaire items. Each data collection session lasted approximately 15–25 min, allowing sufficient time for thorough completion of all questionnaire sections. To ensure data quality, completed questionnaires were reviewed immediately upon collection for completeness. The data collection process strictly adhered to confidentiality standards, with questionnaires containing no personal identifiers to safeguard participant privacy. An informed consent was obtained from the parents of all students. In addition, participants received verbal assurance that their involvement was entirely voluntary and that confidentiality would be maintained throughout the study. The researcher maintained sole access to the collected data, which was used exclusively for research purposes.

2.5. Data Analysis

Data were analyzed by Statistical Package for the Social Sciences (SPSS) version 25 and the results were displayed as a frequency and percentages. Descriptive statistics was conducted to analyze numerical data which helped to describe and summarize data in a meaningful manner, and it helped in calculation of central tendency of mean, median, and standard deviation. Inferential statistics included One-way ANOVA test or T-test to compare means of numeric variables were done when required to analyze data followed by (when significant difference was found), *post hoc* test to show significant different from one another. The researcher categorized adolescent girls KAP scores into three categories based on the percentage of maximum possible scores: "poor"- (0–50%), "fair" (51–75%) or "good" (76–100%).

3. RESULTS

Among the 432 participants, knowledge about MHM as seen in Table 1 was good in 31.5%, fair in 22.7%, and poor in 45.8%. Attitudes were evenly distributed with 31.5% having good attitudes, 33.8% fair attitudes, and 31.5% poor attitudes. Regarding practices, 28.5% demonstrated good practices, 28.9% fair practices, and 42.6% poor practices. Overall, poor knowledge and practices predominated among participants.

Table 2 analyses reveals mean knowledge scores significantly associated with all sociodemographic factors examined. Older adolescents (18–20 years) scored higher (Mean = 10.01 ± 1.40) than younger ones (12–14 years) (Mean = 8.45 ± 2.18) (P = 0.000). Knowledge increased with grade level, from 7th grade (Mean = 8.19 ± 1.97) to 12th grade (Mean = 10.15 ± 1.44) (P = 0.000). Mother's education level significantly impacted scores (P = 0.000), with the highest scores from the single participant whose mother had postgraduate education (Mean = 12.00 ± 0.00). Girls whose mothers worked in non-governmental sectors scored higher than those with housewife mothers (P = 0.040).

Table 3 shows mean attitude scores varied significantly with most socio-demographic factors. Younger adolescents

TABLE 1: Distribution of knowledge, attitude, and practice scores among study participants

Variables (*n*=432)	Scores	Frequency (F)	Percentage
Knowledge menstrual hygiene management	Good	136	31.5
	Fair	98	22.7
	Poor	198	45.8
Attitude toward menstrual hygiene management	Good	136	31.5
	Fair	146	33.8
	Poor	150	31.5
Practices toward menstrual hygiene management	Good	123	28.5
	Fair	125	28.9
	Poor	184	42.6

TABLE 2: The relation between knowledge toward menstrual hygiene management with sociodemographic characteristics among study participants

Sociodemographic characteristics	*n*	Knowledge toward MHM Mean±SD	Statistical analysis	
			t/F	*P*-value
Age groups				
12–14 years	131	8.45±2.18	−12.213	0.000
15–17 years	243	9.81±1.68		
18–20 years	58	10.01±1.40		
Class				
Seventh grade	72	8.19±1.97	19.907	0.000
Eighth grade	72	8.81±2.11		
Ninth grade	72	9.75±1.97		
Tenth grade	72	9.80±1.74		
Eleventh grade	72	9.86±1.36		
Twelfth grade	72	10.15±1.44		
Mother education level				
Illiterate	3	10.33±1.15	4.339	0.000
Primary school graduated	414	9.41±1.94		
Secondary school graduated	7	8.85±1.46		
Institute and collage graduated	7	10.14±1.34		
Postgraduate	1	12.00±0.00		
Mother occupation				
House wife	312	9.32±2.00	−10.621	0.040
Governmental employ	96	9.54±1.72		
Non-governmental employee	24	10.12±1.45		
Any prior information regarding menstruation				
Yes	362	9.42±1.96	−15.064	0.000
No	70	9.47±1.73		

MHM: Menstrual hygiene management

(12–14 years) had more positive attitudes than older ones (18–20 years) ($P = 0.000$). Eighth-graders showed the most positive attitudes (Mean = 44.33 ± 6.08) while twelfth-graders had the least positive (Mean = 39.43 ± 6.11) ($P = 0.000$). Mother's education was not significantly associated with attitudes ($P = 0.071$), Girls with housewife mothers showed more positive attitudes (Mean = 41.94 ± 6.86) than those with employed mothers ($P = 0.007$). Participants without prior menstruation information demonstrated more positive attitudes (Mean = 42.22 ± 5.78) than those with prior information (Mean = 41.18 ± 7.09) ($P = 0.000$).

The association between mean practice scores and socio-demographic factors is shown in Table 4. There was no statistically significant association between practice scores and age ($P = 0.578$). The best practices were displayed by eighth-grade students (Mean = 9.02 ± 1.28), while the worst practices were displayed by seventh-grade students (Mean=8.08±1.81). Grade level had a significant impact on practice scores ($P = 0.000$).

Practice scores were significantly associated with the mother's educational attainment ($P = 0.000$), with girls whose mothers were illiterate demonstrating superior practices (Mean = 9.33 ± 1.52) than those whose mothers were more educated.

Practice scores were strongly impacted by maternal profession ($P = 0.000$), with girls whose moms worked in non-governmental sectors (Mean = 9.04 ± 1.30) exhibiting better practices than those whose mothers were housewives (Mean = 8.58 ± 1.45). Practice results were not significantly impacted by prior knowledge about menstruation ($P = 0.057$).

The correlation analysis between the KAP scores is shown in Table 5. Knowledge and attitude were shown to be weakly negatively correlated ($r = -0.049$, $P = 0.007$), suggesting that greater knowledge was linked to less positive sentiments. There was no discernible relationship between attitude and practice ($r = -0.020$, $P = 0.671$) or between knowledge and practice ($r = -0.060$, $P = 0.212$).

4. DISCUSSION

This research provides valuable insights into how adolescent female students understand, perceive, and manage menstrual

TABLE 3: The relation between attitude toward menstrual hygiene management with socio-demographic characteristics among study participants

Sociodemographic characteristics	*n*	Attitude toward MHM Mean±SD	Statistical analysis	
			t/F	*P*-value
Age groups				
12–14 years	131	42.14±6.41	−14.604	0.000
15–17 years	243	41.04±7.24		
18–20 years	58	40.82±6.45		
Class				
Seventh Grade	72	41.93±7.46	16.241	0.000
Eighth Grade	72	44.33±6.08		
Ninth Grade	72	40.98±7.21		
Tenth Grade	72	39.45±6.17		
Eleventh Grade	72	41.97±7.20		
Twelfth Grade	72	39.43±6.11		
Mother education level				
Illiterate	3	39.00±7.21	1.807	0.071
Primary school graduated	414	41.66±6.82		
Secondary school graduated	7	35.28±2.62		
Institute and collage graduated	7	31.00±1.73		
Postgraduate	1	32.00±0.00		
Mother occupation				
Housewife	312	41.94±6.86	−12.463	0.007
Governmental employee	96	40.03±6.83		
Non-governmental employ	24	38.87±6.75		
Any prior information regarding menstruation				
Yes	362	41.18±7.09	−18.972	0.000
No	70	42.22±5.78		

MHM: Menstrual hygiene management

TABLE 4: The relation between practice toward menstrual hygiene management and sociodemographic characteristics among study participants

Sociodemographic characteristics	*n*	Practice toward MHM Mean±SD	Statistical analysis	
			t/F	*P*-value
Age groups				
12–14 years	131	8.48±1.61	0.557	0.578
15–17 years	243	8.68±1.38		
18–20 years	58	8.67±1.26		
Class				
Seventh Grade	72	8.08±1.81	−17.854	0.000
Eighth Grade	72	9.02±1.28		
Ninth Grade	72	8.88±1.41		
Tenth Grade	72	8.50±1.37		
Eleventh Grade	72	8.65±1.32		
Twelfth Grade	72	8.58±1.24		
Mother education level				
Illiterate	3	9.33±1.52	−4.302	0.000
Primary school graduated	414	8.62±1.45		
Secondary school graduated	7	8.42±0.78		
Institute and collage graduated	7	8.28±1.49		
Postgraduate	1	8.00±0.00		
Mother occupation				
Housewife	312	8.58±1.45	11.041	0.000
Governmental employ	96	8.65±1.45		
Non-governmental employ	24	9.04±1.30		
Any prior information regarding menstruation				
Yes	362	8.71±1.37	15.397	0.057
No	70	8.12±1.71		

MHM: Menstrual hygiene management

TABLE 5: Correlation analysis among knowledge, attitude, and practice toward MHM among study participants

Variables (*n*=432)	Knowledge toward MHM	Attitude toward MHM	Practice toward MHM
Knowledge toward MHM			
Pearson Correlation	1	−0.049	−0.060
P-value	----	0.007	0.212
Attitude toward MHM			
Pearson Correlation	−0.049	1	−0.020
P-value	0.007	----	0.671
Practice toward MHM			
Pearson Correlation	−0.060	−0.020	1
P-value	0.212	0.671	---

MHM: Menstrual hygiene management

hygiene in educational settings. The results show alarmingly high levels of negative attitudes (31.5%), poor practices (42.6%), and poor knowledge (45.8%) about MHM, underscoring the critical need for educational interventions aimed at this demographic.

Recent study found that 67.4% of respondents had poor menstrual hygiene knowledge while 32.6% had good knowledge. Conversely, 52.1% demonstrated good hygiene practices with 47.8% showing poor practices. Multivariate analysis identified mother's education and menstrual knowledge level as significant predictors of menstrual hygiene practices [17].

Another study done in Iran Participants averaged 14.6 ± 1.4 years old, While 92% showed positive attitudes toward menstruation, 64% demonstrated poor knowledge and 81% had poor practices. Mothers were the primary information source (37.4%). Knowledge levels correlated positively with age and information source. Menstrual practices were significantly associated with participant age and maternal education [18].

The findings of earlier research [19] are consistent with the progressive rise in knowledge scores with age and grade level, indicating that exposure to educational materials and peer interactions throughout time enhances comprehension of menstruation. Nonetheless, the significant percentage of teenagers in all age groups who lack adequate information suggests that menstrual health education may not be sufficiently covered in formal schooling.

The important role that parents play in giving accurate information about menstruation is shown by the strong correlations found between parental education especially maternal education and MHM KAP [20].

Mothers who work outside the home, especially in non-governmental sectors, may be more exposed to menstrual hygiene information and resources, which they then share with their daughters, according to the significant impact of maternal occupation on all three domains (KAP) [21]. This study emphasizes how women's empowerment may help improve the menstrual health of teenage girls through education and economic opportunities leads to better menstrual health outcomes. Educated mothers can inform their daughters about menstruation, while financially empowered women can provide necessary hygiene products and challenge stigma. Women in teaching and leadership roles can create supportive environments and advocate for better facilities and policies. Overall, women's empowerment is key to improving menstrual health and breaking barriers.

Concerns over the quality and authenticity of the information being given are raised by the discovery that females who had no prior knowledge of menstruation demonstrated somewhat more knowledge and more positive attitudes than those who had. Even when knowledge is present, negative messages or misinformation regarding menstruation may contribute to unfavorable attitudes and behaviors [22].

The idea that more information does not always equate to better practices is further supported by the fact that, although age and knowledge have a substantial link, there is no significant correlation between age and practice scores. This emphasizes the necessity of all-encompassing interventions that address knowledge gaps as well as accessible resources, supportive contexts, and practical skills [23].

5. CONCLUSION

This study concludes by highlighting the intricate interactions among teenage schoolgirls' KAP around managing their

menstrual hygiene. The results highlight the necessity of thorough, developmentally appropriate menstrual health education programs that address attitudes, abilities, and supportive surroundings in addition to information. Future interventions should be adapted to various age groups and educational levels and should involve parents, especially mothers, as important change agents. To establish a setting where teenage girls may handle their periods with confidence and dignity, it is also crucial to address the shame and taboos associated with menstruation in society.

6. ETHICAL CONSIDERATIONS

This study was approved by the scientific council of the College of Nursing - University of Sulaimani, accordingly an official permission was proposed to the College of Nursing in Sulaymaniyah City. Permission to conduct the study was obtained from the Ministry of Education, in addition students were informed about their independent participation, and consent signed by parents of the students who participated.

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