THE NEW ARMENIAN MEDICAL JOURNAL
Volume18 (2024), Issue 2 p.46-55

DOI: https://doi.org/10.56936/18290825-2.v18.2024-46

MENSTRUAL PATTERNS AND THEIR ASSOCIATION WITH SOME NONGENETIC DETERMINANTS INFLUENCING THE REPRODUCTIVE HEALTH OF ADOLESCENT GIRLS

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Received 26.02.2024; Accepted for printing 30.04.2024

Abstract

Objectives: *The reproductive health of girls is the key to the health of the future generation. This research aimed to evaluate girls' menstrual patterns and their dependence on some nongenetic determinants influencing the reproductive health of adolescent girls.*

Matwerial and Methods: *The cross-sectional descriptive study was conducted among 417 high school adolescent girls. The questionnaire included items concerning socioeconomic status, components of lifestyle, academic performance, age at menarche and menstrual patterns of girls.*

Results: *The mean age at menarche was 12.4±0.9 years. The mean duration of the menstrual cycle was 27.6±3.6 days with the mean duration of bleeding 4.7±1,1 days. The irregular cycle was experienced by 1/4 of girls, dysmenorrhea and menstruation-related symptoms have been mentioned by 40.5% of girls. Only 23% of girls consulted a physician concerning dysmenorrhea and menstruation-related symptoms. Results have shown statistically significant impact of family size, family income, academic performance, nutritional habits, sleep, etc. on the cycle regularity and dysmenorrhea.*

Conclusion: *The menstrual patterns of the majority of girls were in a range of normal values. The prevalence of irregular cycles, the prevalence of dysmenorrhea and menstruation-related symptoms were lower as compared to other studies. Nevertheless, around half of girls, who mentioned dysmenorrhea and menstruation-related symptoms, were not serious about these symptoms. Some socioeconomic factors and components of lifestyle (family size, family income, nutrition, sleep) have been shown to influence the cycle regularity and dysmenorrhea. Hence, these findings highlight the need to enlarge the knowledge concerning reproductive health and healthy lifestyle among adolescent girls.*

Keywords: *age at menarche, menstrual pattern, dysmenorrhea, adolescents*

Introduction

Adolescence is one of the most important and valuable stages of the life cycle. This transitional stage from childhood toward adulthood is the start of physiological and social changes that can affect people's lives during their adult years. Adolescence is associated with crucial endocrinological, somatic and psychological changes in girls. Reproductive health is perceived as an expected endpoint of girls' sexual maturation [*Karapanou O, Papadimitriou A, 2010*].

Cite This Article as:

Aslanyan A.H., Mkrtchyan S.H., Mkrtchyan A.M., Khachikyan N.Z., Avetisyan L.R (2024). Menstrual patterns and their association with some nongenetic determinants influencing the reproductive health of adolescent girls; The New Armenian Medical Journal, vol.18(2), p.46-55; DOI: https://doi.org/ 10.56936/18290825-2.v18.2024-46

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"Menarche is a milestone in a woman's life as it denotes the start of reproductive capacity" [*Karapanou O, Papadimitriou A, 2010*]. Menarche is defined as the first menstrual period, the most notable event during female puberty that is accompanied by physical growth, ability in marriage and fertility. The age at menarche depends on the interaction between genetic and non-genetic factors.

"Despite the apparently major role of genetic factors in age at menarche, environmental factors have gained increased attention, because many of them may potentially be controlled, which, in turn, may increase survival in later adulthood" [*Yermachenko A, Dvornyk V, 2014*]. The age at menarche and menstrual patterns may be influenced by socioeconomic factors, such as family size, family income, level of parental education, etc. [*Karapanou O, Papadimitriou A, 2010*]. High socioeconomic status of the family is associated with earlier menstruation onset [*Wronka I, Pawlińska-Chmara R, 2005*]. Menstrual patterns are also influenced by a number of host and environmental factors [*Rowland AS et al., 2002; Wronka I, Pawlińska-Chmara R, 2005*]. Klein and Litt reported that socioeconomic status was positively correlated with dysmenorrhea [*Klein JR, Litt IF, 1981*].

Multiple studies confirm that early pubertal development is an important medical and social problem associated with adolescents' risky behaviors [*Gaudineau A et al., 2010*], in addition to health problems in later life such as metabolic diseases [*Jung H et al., 2022*], cardiovascular diseases [*Feng Y et al., 2008*], obesity [*Gaudineau A et al., 2010*], type 2 diabetes [*Dreyfus JG et al., 2012*], breast cancer [*Yang Y et al., 2022*], psychological disorders such as delinquent and violent behaviors, premature intercourse [*Lynne SD et al., 2007*]. All at all, it may result in increased morbidity and mortality in later life [*Walvoord EC, 2010*]. On the other hand, late menarche is also associated with health problems, in particular osteoporosis and increased fracture risk [*Fox KM et al., 1993, Yang Y et al., 2022*] and hypertension [*Chen L et al., 2021*].

The American College of Obstetricians and Gynecologists and the American Academy of Pediatrics have emphasized that menstrual cycle assessment should be viewed as an additional vital sign, thus allowing for timely identification of normal pubertal development and pathological processes in adolescent girls [*ACOG 2015*]. The length of a menstrual cycle is the number of days between the first day of menstrual bleeding of one cycle to the onset of menses of the next cycle.

"Ninety percent of cycles will be within the range of 21–45 days, although short cycles of less than 20 days and long cycles of more than 45 days may occur. By the third year after menarche, 60–80% of menstrual cycles are 21–34 days long, as is typical of adults". Menstrual periods in this age group should last 7 days or less. Menstrual bleeding is a normal physiological change in females concerning sexual maturation. Nevertheless, many girls face problems with menstruation including irregular cycles, excessive bleeding, painful menstruation, etc. [*AAP 2006; ACOG, 2015*].

"Painful menstruation or dysmenorrhea is a common gynecologic disorder among young females. Alsaleem M.A. defined as pelvic pain directly related to menstruation and is associated with various other symptoms" [*Alsaleem MA, 2018*]. Dysmenorrhea may also be accompanied by other symptoms such as headaches, dizziness, symptoms related to gastrointestinal problems (nausea, vomiting, diarrhea), backache and leg pains. The high prevalence of menstrual problems, in particular dysmenorrhea among adolescents [*Hickey M, Balen A, 2003; Alsaleem MA, 2018*] especially in the first year of their reproductive life influences their daily activities [*Ju H et al., 2014]*], and is thus a major public health problem [*Kural et al., 2015*] .

This research aimed to evaluate girls' menstrual patterns and their dependence on some nongenetic determinants influencing the reproductive health of adolescent girls.

Materials and Methods

The study was designed to be cross-sectional descriptive and conducted among 417 adolescent girls studying in the first year of education of high schools of Yerevan. The schools were selected randomly from different administrative districts of Yerevan.

Before conducting the research, all participants were informed about the purpose and procedure of the study. Only girls consenting to participate in the study were involved in it. All the participants were also informed that they deserved the right to withdraw from the study at any time. Anonymity

was assured and emphasized. The research was approved by the Ethical Committee of Yerevan State Medical University.

The data were collected by a validated self-administered questionnaire. The questionnaires were pretested in one of the schools in Yerevan, and, consequently, they were excluded from the study.

The questionnaire included information on socioecomonic status, components of lifestyle, academic performance, age at menarche, and menstrual patterns of girls. Questions related to the socioecomomic status and academic performance of respondents include age, family size, family income, level of parental education, academic performance, time spent on home tasks, and fatigue recovery. Respondents were also asked about some components of lifestyle to reveal if these factors affect menstrual patterns. Questions included issues related to physical activity, duration and quality of sleep, dietary habits such as the number of meals per day, eating regularity, having breakfast, etc.

The questions on the girls' menstrual patterns concerned age at menarche, duration of menstrual cycle, cyclicity, average days of bleeding, pain, associated with menstruation, and any other problems in relation to menses. Age at menarche was obtained by using the recall method [*Karapanou O, Papadimitriou A, 2010*]. The girls were asked to remember, as accurately as possible, the date of their first menstrual bleeding. In the present study, we hypothesized that deviations in pubertal timing could be evaluated using the 5th percentile of the observed distribution of age at menarche in our population. Age at menarche was classified into early menarche (11.2 years or less), medium menarche (between 11.2 to 14.1 years), and delayed menarche (14.1 years and more). Regular menstruation was considered as a cycle repeated once every 21-34 days with a duration of 7 days or less. Menstruation interval lasting less than 21 days was defined as polymenorrhea, and oligomenorrhea if the menstruation interval was more than 34 days.

The answers were required short (yes / no), multiple choice or numbered ones.

The obtained data were analyzed using the Statistical Package for Social Sciences (SPSS, version 20). Descriptive statistics is used to calculate mean values, standard deviations and percentages for most of the variables. The statistical significance of differences between groups was tested using the Pearson Chi-square test. The statistically significant association was considered when $p<0.05$.

Results

A total of 417 girls completed the questionnaires. Ten of them (aged less than 15 years) noted the absence of menarche yet, hence, their results were excluded. Thus, the total number of girls participating in the study was 407. The mean age of respondents was 14.2±0.4 years. The mean age at menarche by recall method was 12.4±0.9 years ranging between 10.8 and 14.10 years.

The characteristics related to menstrual patterns (cycle length, menstrual flow length, distribution of onset of menarche and cycle regularity) are shown in Table 1.

With regards to the menstrual cycle length, the mean duration of the menstrual cycle was 27.6±3.6 days. The majority of respondents (90.7%) reported a duration of menstrual cycle between 21 and 34 days. This is also shown in Figure 1. Only 17 girls (4.2%) mentioned shorter duration (less

Table 1.

Menstrual patterns of adolescent girls of Yerevan

Variations	n (%)
Cycle length	
< 21 days	17 (4.2%)
21–34 days	369 (90.7%)
> 34 days	21 (5.2%)
Duration of menstruation	
< 3 days	2 (0.5%)
3–7 days	402 (98.8%)
> 7 days	3 (0.7%)
Distribution of onset of menarche	
Early menarche	24 (5.9%)
Medium menarche	352 (86.5%)
Late menarche	31 (7.6%)
Cycle regularity	
Regular	310 (76.2%)
Irregular	97 (23.8%)

than 21 days) of menstrual cycle and 21 of them (5.2%) – more than 34 days. The survey revealed that the average menstrual flow length is 4.7±1,1 days. Most of the girls (98.8%) reported normal menstrual flow length (3-7 days). This is also represented in Figure 2. Nevertheless, 2 of them (0.5%) mentioned a shorter duration of menstruation (less than 3 days), and 3 respondents (0.7%) pointed longer duration of menstrual flow (more than 7 days). The largest number of girls (86.5%) had medium menarche. Nevertheless, 5.9% of girls had early menarche and 7.6% of respondents had late menarche. An irregular cycle was experienced by 1/4 of girls (23.8%), whereas 76.2% of them had regular menstrual cycle.

Based on the results of the study, 40.5% of girls mentioned dysmenorrhea and menstruation-related symptoms. Dysmenorrhea was reported by 33.2% of respondents. The other symptoms, related to menstruation such as back pain (23.1%), headache (7.1%), nausea (5.2%) and dizziness (3.4%) were also mentioned in answers. All mentioned symptoms were permanent among 22.4% of girls, participating in the study. Only 23% of girls consulted

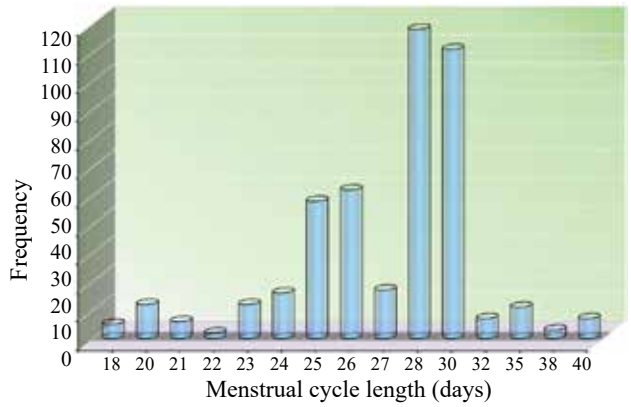

Figure 1. *Menstrual cycle length*

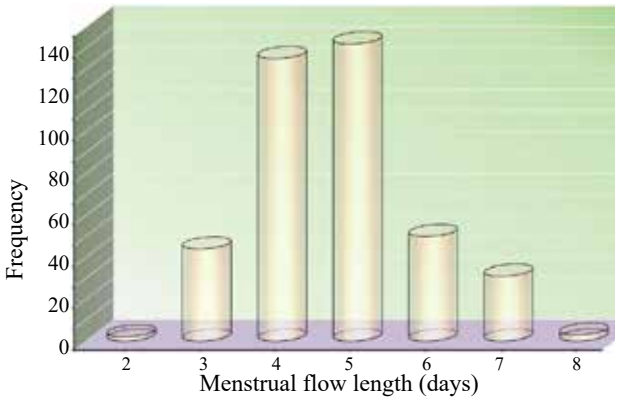

Figure 2. *Menstrual flow length*

Table 2.

Relationship between regularity of menstrual cycle and menstrual patterns

Menstrual patterns	Regularity		χ^2	p value
	Regular n (%)	Irregular n (%)		
After menarche				
by the first year	45 (63.4)	26 (36.6)	11.63	0.03
by the second year	231 (77.3)	68 (22.7)		
by the third year	34 (91.9)	3 (8.1)		
Cycle length				
< 21 days	13 (76.5)	4 (23.5)	0.274	0.872
21–34 days	282 (76.4)	87 (23.6)		
> 34 days	15 (71.4)	6 (28.6)		
Duration of menstruation				
< 3 days	2 (100)	0	3.667	0.16
3–7 days	307 (76.4)	95 (23.6)		
> 7 days	1 (33.3)	2 (66.7)		

a physician concerning dysmenorrhea and menstruation-related symptoms. The rest of the respondents did not apply to the doctor, explained by different reasons. The most prevalent cause in a girls' answers was ,,I am not serious about these symptoms". This may be because girls expect the pain as a normal part of the menstrual cycle or they tolerate the pain without resorting to self-care strategies. Next prevalent answers were ,,I have no time" and ,,I feel shy".

As it is shown in table 2, the regularity of the menstrual cycle is significantly associated with years' number increase after menarche ($p<0.03$). The menstrual cycle is regular at the end of the first year after menarche among 63.4% of girls. Prevalence of regular menstrual cycle increases up to 77.3% by the second year after menarche and reaches 91.9% by the third year after menarche. There was no significant association between regularity of menstrual cycle and menstrual cycle length ($p<0.872$). There was also no significant association between regularity of menstrual cycle and menstrual flow length ($p<0.16$).

Table 3 shows the comparative analysis of the menstrual patterns among girls, mentioned dysmenorrhea and menstruation-related symptoms, with those who reported no dysmenorrhea and menstruation-related symptoms. Statistically significant association was revealed only between regularity of

TABLE 3.

Relationship between dysmenorrhea and menstruation-related symptoms and menstrual patterns

Menstrual patterns	Dysmenorrhea and menstruation related symptoms			
	Yes n (%)	No n (%)	χ2	p value
After menarche				
by the first year	34 (47.9)	37 (52.1)	2.238	0.327
by the second year	115 (38.5)	184 (61.5)		
by the third year	16 (43.2)	21 (56.8)		
Cycle length				
< 21 days	9 (53)	8 (47)	2.543	0.280
21–34 days	145 (39.3)	224 (60.7)		
> 34 days	11 (52.4)	10 (47.6)		
Duration of menstruation				
< 3 days	1 (50)	1 (50)	0.934	0.627
3–7 days	162 (40.3)	240 (59.7)		
> 7 days	2 (66.7)	1 (33.3)		
Regularity of menstrual cycle				
Yes	108 (34.8)	202 (65.2)	17.543	0.000
No	57 (58.8)	40 (41.2)		

the menstrual cycle and dysmenorrhea, menstruation-related symptoms ($p<0.000$). However, no significant association with other menstrual patterns was detected in the frame of the study.

The menstrual cycle regularity and dysmenorrhea along with menstruation-related symptoms dependence on socioeconomic factors, academic performance and lifestyle of adolescent girls are shown in table 4.

Concerning socioeconomic factors, our results have revealed positive impact of patterns of living of girls on the regularity of their menstrual cycle. Cycle regularity was found to be negatively associated with family size ($p<0.001$) and family income ($p<0.039$). Dysmenorrhea and menstruation-related symptoms were more prevalent among girls from large-sized families [$p<0.004$] and those of high family income ($p<0.003$).

In relation to evaluation the factors concerning to educational process, a negative association was evident for girls' cycle regularity and time spent on home tasks ($p<0.005$). Nevertheless, recovery of fatigue positively influences on menstrual cycle regularity ($p<0.000$). A positive association has been also revealed between the academic performance of girls and their cycle regularity.

TABLE 4.

Menstrual cycle regularity and dysmenorrhea along with menstruation-related symptoms dependence on socioeconomic factors, academic performance and lifestyle of adolescent girls

Factors	Regularity of menstrual cycle			Dysmenorrhea and menstruation related symptoms		
	P value	χ^2	Pearson's R	P value	χ^2	Pearson's R
Patterns of living	0.000	16.377	0.201	0.425	0.637	-0.040
Family size	0.001	10.598	-0.161	0.004	8.472	0.144
Family income	0.039	4.258	-0.102	0.003	8.585	0.145
Parental educational level	0.669	0.805	-0.320	0.351	2.091	0.015
Academic performance	0.047	6.104	0.070	0.019	7.927	0.139
Time spent to home tasks	0.005	20.432	-0.177	0.011	18.271	0.100
Tiredness recovery	0.000	14.55	0.189	0.000	14.755	-0.190
Number of meal intakes	0.304	2.383	-0.009	0.000	16.158	-0.165
Regularity of eating regimen	0.000	26.315	0.254	0.005	8.068	-0.141
Habit to have a breakfast	0.003	11.658	0.169	0.309	2.351	-0.025
Physical activity	0.110	4.417	-0.047	0.943	0.117	0.012
Sufficient sleep duration	0.005	8.035	0.141	0.067	3.367	0.091
Seep quality	0.000	13.508	0.182	0.000	21.457	-0.118

Results of our study have revealed increase of prevalence of dysmenorrhea and menstruation-related symptoms among adolescent girls along with an increase in scores of academic performance ($p<0.019$). Results also mentioned a direct association between the prevalence of dysmenorrhea and menstruation-related symptoms and time dedicated to home tasks ($p<0.011$). Recovery of fatigue is positively associated with the decrease of dysmenorrhea and menstruation-related symptoms prevalence ($p<0.000$). Hence, sufficient rest decreases prevalence of dysmenorrhea and menstruation-related symptoms.

Concerning nutrition, our results have revealed a significant association between some dietary habits and cycle regularity. Thus, healthy habits of following eating regimen and to have breakfast were positively associated with cycle regularity ($p<0.000$ and $p<0.003$ respectively). Results of our study have also shown adverse impact of irregular eating regimen on the prevalence of dysmenorrhea and menstruation-related symptoms ($p<0.005$). Results of the present study revealed no association between eating breakfast and the prevalence of dysmenorrhea and menstruation related symptoms. The increase of the prevalence of dysmenorrhea and menstruation-related symptoms among adolescent girls is negatively associated with the number of meals ($p<0.000$).

Menstrual cycle regularity was positively associated with sleep sufficient duration [$p<0.005$] and quality of sleep ($p<0.000$). Dysmenorrhea and menstruation-related symptoms were significantly associated with sleep disturbances ($p<0.000$).

Neither significant association between physical activity and cycle regularity nor prevalence of dysmenorrhea and menstruation-related symptoms were detected in the frame of the study.

Discussion

The most reliable marker of the pubertal development is age at menarche. Results of different studies reported age at menarche as 11.71 years in Brazil [*Barros BS et al., 2019*], 12.2±0.9 years in Nepal [*Sharma S et al., 2016*] 12.3±1.1 years in Malaysia [*Lee LK et al., 2006*], 12.4±1.3 years in Italy [*Rigon F et al., 2012; De Sanctis V et al., 2019*], 12.49±1.2 years in Egypt [*Abdelmoty HI et al., 2015*], 12.8±1.2 years in France [*Gaudineau A et al., 2010*], 12.9±1.4 years in Saudi Arabia [*Alsaleem MA, 2018*], 13.1±0.9 years in Norway [*Bratke H et al., 2017*], 13.1 ± 1.2 years in Jordan [*Ghandour R et al., 2023*]. The mean age at menarche for Caucasian females from various populations varies from 11.96 to 12.93 [*Yermachenko A, Dvornyk V, 2014*]. Based on the results of our study, the mean age at menarche among Armenian adolescent girls was 12.4±0.9 years. The mean age at menarche of Armenian adolescent girls is slightly lower than the mean age at menarche of girls of regional geographical neighborhoods such as Turkey (mean age at menarche is 12.8±1.3years) [*Cakir M et al., 2007*] and Iran (mean age at menarche is 12.81 years) [*Bahrami N et al., 2014*].

The mean duration of the menstrual cycle of girls in our study was 27.6±3.6 days. The result of our study is similar to value obtained in the study done in Turkey, where mean cycle length was registered to be 27.7± 2.5 days [*Cakir M et al., 2007*]. In some reports the mean cycle length of the girls was longer like among adolescent girls from Pokhara Valley (34.8±11.8 days) [*Sharma S et al., 2016*]. Though the majority of girls in the present study experienced the menarche just 1-2 years ago, duration of menstrual cycle of the majority was within the normal values (21-34 days). Nevertheless, 4.2% of them had shorter menstrual cycle and 5.2% of them reported menstrual cycle longer than 34 days. Similar studies conducted in different countries have revealed variable results concerning menstrual cycle length [*Lee LK et al., 2006; Aziem A et al., 2011; Rigon F et al., 2012*].

The results of studies conducted in different countries showed that around 90% of girls experienced normal bleeding duration [*Rigon F et al., 2012; Sharma S et al., 2016*]. In the results obtained from our study, almost all participating girls [98.8%] reported normal duration of menstrual bleeding (3-7 days). Nevertheless, among a few of them shorter and longer duration of menstrual flow was also registered. Both deviations of bleeding duration, in particular prolonged menstruation, and warrant attention, especially in cases of association with signs related health problems [*Hickey H, Balen A, 2003; American Academy of Pediatrics, Committee on Adolescence, 2006; Lee LK et al., 2006; Rigon F et al., 2012*].

The prevalence of irregular menstrual cycle

varies in the results done in different countries such as 20% in Italian adolescents [*De Sanctis et al., 2019*], 25.1% in girls from eastern Sudan [*Aziem A et al., 2011*], 31.2% in girls in Turkey [*Cakir M et al., 2007*], about half of respondents in Kuwait [*Al-Matouq S et al., 2019*], more than half of girls from Pokhara Valley [*Sharma S et al., 2016*], 63.9% in girls from Nepal [*Prasai M et al., 2023*]. Irregularity of the menstrual cycle was reported by 23.8% of Armenian adolescents who participated in our investigation. At the same time, it should be mentioned, that an irregular menstrual cycle is a normal condition among adolescents within the 2 years after onset of menstruation [*Zegeye DT et al., 2009*].

Dysmenorrhea is the most prevalent menstrual disorder among adolescent girls. For instance, 44.3% of girls in eastern Sudan [*Aziem A et al., 2011*], 67.7% of girls in Malaysia [*Lee LK et al., 2006*], 70.6% of girls in Saudi Arabia [*Alsaleem MA, 2018*], around 70% girls in Italy [*Rigon F et al., 2012*], 71.5% girls in Pokhara Valley [*Sharma S et al., 2016*], majority of girls in Kuwait and Turkey consisting 85.6% and 89.5% respectively [*Cakir M et al., 2007; Al-Matouq S et al., 2019*] and 96% of girls in Jordan [*Ghandour R et al., 2023*] reported dysmenorrhea. The prevalence of dysmenorrhea was twice lower among Armenians, consisting of 33.2%. Nevertheless, only 1/4 of girls, being experienced dysmenorrhea and menstruation-related symptoms (that is total 40.5% of participants) consulted to physician. Still, only doctors can identify whether these symptoms are within the norms or pathology, to reveal the menstrual pathology as early as possible to minimize the risk of possible complications.

Socioeconomic status. Concerning socioeconomic factors, higher parental education is associated with earlier timing of puberty and menstrual patterns [*Wronka I, Pawlińska-Chmara R, 2005*]. In contrast to the data given in the mentioned reports, the results of the present study have shown no significant association between parental educational level and menstrual patterns.

Surveys conducted among adolescent girls showed a decline in academic performance among the majority of girls who experienced dysmenorrhea [*Lee LK et al., 2006; Cakir M et al., 2007; Abdelmoty HI et al., 2015; Al-Matouq S et al., 2019*]. Results of our study have revealed an increase in the prevalence of dysmenorrhea and menstruation-related symptoms among adolescent girls along with an increase in scores of academic performance.

Nutrition. Reproductive health of young women is also affected by dietary habits. The skipping breakfast adversely affects menstrual disorders in young college students. Results of the mentioned study reported an increase the prevalence of irregular menses in the group of girls skipping breakfast [*Fujiwara T et al., 2009*]. Results of this study have shown a positive association between healthy habits to having a breakfast and following an eating regimen and cycle regularity.

Skipping breakfast is correlated with increase of the prevalence of dysmenorrhea [*Fujiwara T et al., 2009; Fujiwara T, 2018; Mammo M et al., 2022; Ghandour R et al., 2023*]. Results of our study have shown adverse impact of irregular eating regimen and number of meal intake on the prevalence of dysmenorrhea and menstruation-related symptoms. Results of the present study revealed no association between eating breakfast and the prevalence of dysmenorrhea and menstruation-related symptoms.

Sleep. Menstrual cycle irregularity prevalence tended to decrease as sleep duration increased. The study conducted in South Korea found a significant inverse association between sleep duration and menstrual cycle irregularity among Korean female adolescents. Increasing sleep duration is required to improve the reproductive health of female adolescents [*Eun G et al., 2017; Jeong D et al., 2023*]. Irregular cycles and period pain are associated with sleep disturbances in the study done among Chinese adolescent girls [*Liu X et al., 2017*]. The results of the present study were consistent with other reported findings. Menstrual cycle regularity was positively associated with sleep duration and quality of sleep. Dysmenorrhea and menstruation-related symptoms were significantly associated with sleep disturbances.

Physical activity. Results of different studies reported no association between menstrual disorders and physical activity [*Lee LK et al., 2006; Blakey H et al., 2010; Abbasi S et al., 2022*]. Similar to other studies, neither significant association was also found in the results of our study between

physical activity and cycle regularity nor with prevalence of dysmenorrhea.

Our study has some limitations. All results were based on self-reports of adolescents. The possibility remains that some girls may skip some information or do not fill survey accurately. The recall method was used to assess the age at menarche. However, as the participants were at ages close to the event, the probability of memory bias was reduced. The survey was designed as cross-sectional, hence, it is impossible to reveal a cause-effect relationship. It is required conduction of longitudinal investigation concerning health of adolescents, combining results of surveys with the results of medical check-ups. The study was conducted in Yerevan, so the results cannot be generalized to all adolescent girls in Armenia. Consequently, more studies are needed throughout Armenia.

Conclusion

The menstrual patterns of the majority of girls were in a range of normal values. The prevalence of irregular cycles, the prevalence of dysmenorrhea and menstruation-related symptoms were lower as compared to other studies. Nevertheless, around half of girls experiencing dysmenorrhea and menstruation-related symptoms, were not serious about these symptoms and expected the pain as a normal part of the menstrual cycle. Some socioeconomic factors and components of lifestyle (family size, family income, nutrition, sleep) have been shown to influence the cycle regularity and dysmenorrhea. Hence, these findings highlight the need to enlarge the knowledge concerning reproductive health and healthy lifestyle among adolescent girls.

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THE NEW ARMENIAN MEDICAL JOURNAL

Volume18 (2024). Issue 2

The Journal is founded by
Yerevan State Medical
University after M. Heratsi.

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Our journal is registered in the databases of Scopus, EBSCO and Thomson Reuters (in the registration process)

SCOPUS EBSCO REUTERS

Copy editor: Tatevik R. Movsisyan

Printed in "LAS Print" LLC
Director: Suren A. Simonyan
Armenia, 0023,Yerevan,
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Phone: (+374 10) 62 76 12,
E-mail: las.print@yahoo.com

THE NEW ARMENIAN MEDICAL JOURNAL
Volume18 (2024). Issue 2

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