

Evaluation of Menstrual Irregularities and Dysmenorrhea in University Students

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ABSTRACT:

Purpose: Menstruation takes an important place in women's lives all over the world. For this reason, problems such as menstrual irregularities and dysmenorrhea affect women's lives in many ways. Our study aims to determine the factors associated with menstrual irregularities and dysmenorrhea.

Materials and methods: It is a cross-sectional study. 1807 students participated. The study was carried out in 2017. The data were collected with the personal information form developed by reviewing the literature. Descriptive statistics such as mean, standard deviation, percentage and logistic regression analysis were used in the study.

Results: The average age of the students was 20.33±1.83 and the average age of menarche was 13.41±1.25. 93.5% were single and 66.5% had BMI within normal limits. The majority of the students did not have regular smoking (82%) and exercise habits (73.4%). 23.7% of the students reported menstrual irregularities and 40.5% reported dysmenorrhea. In addition to being overweight, not exercising regularly, caffeine and smoking habits, being single factors were found to be associated with menstrual irregularity. Factors such as being overweight, history of dysmenorrhea in the mother, and lack of exercise habits were also found to be associated with dysmenorrhea.

Conclusion: The rates of menstrual irregularities and dysmenorrhea in university students of reproductive age are not to be underestimated. It is recommended to conduct intervention studies for interchangeable factors such as regular exercise and BMI associated with these problems.

Keywords: Menstruation, dysmenorrhea, students

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INTRODUCTION

Gynecological morbidity rates in young women of reproductive age continue to be an important problem in modern medicine (Nagma et al., 2015; Volel et al., 2016). In fact, the 2015 report of the American College of Obstetricians and Gynecologists went so far as to recommend that a woman's menstrual cycle be considered a vital sign, along with blood pressure, pulse rate, and body temperature (American College of Obstetricians and Gynecologists, 2015). Despite this view, problems related to menstruation often attract little attention. However, menstruation is a physiological process

and women experience this process for most of their lives (Kadir et al., 2010). It has been reported that menstrual irregularities, which are defined as the abnormal length or variability of menstruation, which has an important time period in women's lives, affect women of reproductive age at very different rates (Palm-fischbacher and Ehlert, 2014). Dysmenorrhea, which is defined as pain associated with menstruation, is one of the most frequently reported menstrual problems in women (Ma et al., 2010; Ayan et al., 2013). In the studies, menstrual irregularities were determined as 32.6% in Ethiopia (Zeru et al., 2021), 44.8% in India (Vanitha et al.,

2017), 49.1% in China (Ansong et al., 2019), 24% in Pakistan (Dars et al., 2014) and 64.2% in Nepal (Sharma, et al., 2016). In a study conducted in Turkey, the frequency of menstrual irregularity was found to be 23.8% (Uçar et al., 2015). For dysmenorrhea, these rates vary between 16% and 91% (Ju et al., 2014). As can be seen, usually menstrual disorders affect women from all over the world and are among the main causes of increasing gynecological visits (Bayer and DeCherney, 1993). Apart from the known health problems associated with these menstrual problems, we also encounter serious economic consequences such as loss of job attendance. This situation may result in poor academic performance, negatively affecting future achievements and employment opportunities (Diaz et al., 2006). Global disease burden assessment does not account for menstrual dysfunction. However, menstrual irregularities are quite common in university women and this problem negatively affects their physical, mental, emotional, and social well-being. Menstrual irregularities are also a well-known cause of absenteeism in schools (Ansong et al., 2019). Nowadays, more and more female students are participating in university life. For this reason, it is extremely important to identify health problems and understand the health needs to raise a good quality workforce, the current study is designed with this idea in mind. Therefore, answers to the following questions were sought: What are the factors associated with menstrual irregularities in university students?, What are the factors associated with dysmenorrhea in university students?

MATERIALS AND METHODS

Purpose and Type of the Study

Our study aims to determine the factors related to menstrual irregularities and dysmenorrhea. It is designed as a cross-sectional study.

Population and Sample of the Research Sampling and Participant

The study was conducted between 01.10.2017-31.12.2017 to determine the menstrual irregularity and dysmenorrhea factors in female students studying in the faculties of economic, administrative,

and health sciences at a university in Burdur province. Considering the effect of the fertility stories of the students on the menstrual cycle order, those who are pregnant or suspected of being pregnant, breastfeeding, and those who gave birth within the last year were not included in the study. Students were given written and verbal information about the study. Among the inclusion criteria, volunteering, being 18 years of age or older, filling out the forms completely, and reading, understanding, and writing in Turkish were also sought. In the study, it was tried to reach 2363 female students, who were the whole population of the study. The study was completed with 76.47% (1807) of the targeted population that met the research criteria. Before the data were collected, male students were removed from the class.

Data Collection Tools

Personal Information Form: The data were collected with the Personal Information Form developed by reviewing the literature (Aram Aber, 2018; Ansong et al., 2019; Chang et al., 2009; Cakir et al., 2007; Palm-fischbacher and Ehlert, 2014; Potur et al., 2014; Rigon et al., 2012; Sharma et al., 2016). In addition to some introductory characteristics of the students such as age and body mass index (BMI), it consists of questions including menstrual cycle history such as menstrual irregularity, dysmenorrhea, and menarche age. Smoking has been accepted as at least 1 or more smoking per day (Palm-Fischbacher and Ehlert, 2014). Those who exercised 3 or more times a week were considered to exercise regularly (Chang et al., 2009). The BMI of the participants was calculated as kg/m^2 by dividing the weight by the square of the height. BMI of the students was divided into 3 groups. Those with $\text{BMI} < 18.5 \text{ kg/m}^2$ were defined as thin, those with $18.5\text{-}24.9 \text{ kg/m}^2$ as normal, and those with $\text{BMI} > 25 \text{ kg/m}^2$ and above were defined as fat (World Health Organization, 2004). In the study, a menstrual irregularity was evaluated as menstrual irregularity if there were sudden and significant irregularities in monthly and regular cycles; cycles less than 22 days and lasting more than 35 days; bleeding less than 3 days and lasting more than 7 days; and vaginal bleeding requiring the replacement of more than one tampon

or pad in 1-2 hours (Cakır et al., 2007; Rigon et al, 2012).

Visual Analogue Scale (VAS): Female students who participated in our study on a 10 cm ruler writing painlessness at one end and the most severe pain at the other end were asked to mark the pain they experienced during the menstrual period. It is stated that VAS is more sensitive and reliable in measuring pain intensity than other one-dimensional scales. It has been determined that vertical use is better understood by individuals to ensure standardization in VAS (Chen and Chen 2004; Eti Aslan, 2002). According to the visual comparison scale, those who marked the level of dysmenorrhea pain between 1-3.9 cm were evaluated as mild, those who marked it between 4-7.9 cm were evaluated as moderate, and those who marked it between 8-10 cm were evaluated as experiencing severe dysmenorrhea pain (Potur et al., 2014).

Data Collection

The data were collected in the classrooms based on self-report from the students in a way that does not disrupt the course order. It took an average of 15-20 minutes to fill in the data collection tools.

Statistical Analysis

The data were evaluated with SPSS (22.0, IBM Corp., Armonk, NY). Descriptive statistics such as mean, standard deviation, percentage, logistic regression analysis were used in the study. Kolmogorov-Smirnov test was used to evaluate the suitability of the data for normal distribution. A p-value of <0.05 was considered significant in the statistical tests.

Ethical Approval

Ethics committee permission (GO 2017/68) was obtained from Mehmet Akif Ersoy University to conduct the study. Oral and written information was given to the students participating in the study. Informed consent was obtained from the students. During the research process, the rules of the Helsinki Declaration were followed.

RESULTS

The average age of the students was 20.33 ± 1.83 and

the average age of menarche was 13.41 ± 1.25 . The majority of the students did not have regular smoking (82%) and exercise habits (73.4%). 23.8% of the students reported menstrual irregularities and 40.5% reported dysmenorrhea (Table 1).

The results of the logistic regression analysis performed with the enter method to determine the variables predicting menstrual irregularity are given in Table 2. According to these results, it was determined that marital status, BMI, regular exercise, regular smoking, and regular caffeine consumption habit were the variables that predicted the menstrual cycle. The risk of menstrual irregularity in overweight patients is 1.43 times higher than in those with underweight menstrual disorders (OR 1.43; 95% CI, 1.03-1.99). The risk of menstrual irregularity is 0.17 times higher in those without regular exercise habits (OR 0.17; 95% CI, 0.11-0.26). The risk of menstrual irregularity is 0.65 times higher in those who take caffeine daily than in those who do not take the risk of menstrual irregularity (OR 0.65; 95% CI, 0.45-0.94). The risk of menstrual irregularity is 1.64 times higher in regular smokers than in those who do not use (OR 1.64; 95% CI, 1.19-2.27). The risk of menstrual irregularity in single patients is 2.05 times higher than in married patients (OR 2.05, 95% CI, 1.04-4.04). Dysmenorrhea severity is given in Table 3. According to this table, 62.3% of the students' menstrual pain severity is moderate.

The results of the logistic regression analysis performed with the enter method to determine the variables predicting the history of dysmenorrhea in girls are given in Table 4. Accordingly, it was determined that BMI, family history of dysmenorrhea, and regular exercise were important variables in predicting dysmenorrhea. When the variables predicting dysmenorrhea are examined, the risk of dysmenorrhea is 2.20 times higher in overweight/obese patients compared to those with underweight (OR 2.20; 95% CI, 1.70-2.85). It is 2.28 times higher in those with a family (mother) history of dysmenorrhea than those without a risk of dysmenorrhea (OR 2.28; 95% CI, 1.86-2.80). It is 2.51 times higher in those who do not have a regular exercise habit than those who have a risk of dysmenorrhea (OR 2.51; 95% CI, 1.95-3.22).

Table 1. Distribution of Participants Descriptive Characteristics

Characteristics	$x \pm SD$	Min -max	
Age (year)	20.33±1.83	18-26	
Age of Menarche	13.41±1.25	10-18	
		n	%
Menstrual Cycle	Regular	1378	76.2
	Irregular	429	23.8
Age	≤20	1082	59.9
	21-23	700	38.7
	≥24	24	1.4
Marital Status	Single	1689	93.5
	Married	118	6.5
Regular Caffeine Consumption	Yes	1402	77.6
	No	405	22.4
Regular Exercise	Yes	481	26.6
	No	1326	73.4
Regular Drug Use	Yes	274	15.2
	No	1533	84.8
BMI	Underweight	218	12.1
	Normal	1210	66.9
	Overweight/obese	379	21
Regular Smoking	Yes	325	18
	No	1482	82
Pregnancy History	Yes	62	3.4
	None	1745	96.6
History of Dysmenorrhea in the Mother	Yes	771	42.7
	No	1036	57.3
Experiencing Dysmenorrhea	Yes	732	40.5
	No	1075	59.5

BMI: Body Mass Index

Table 2. Logistic Regression Analysis of Independent Variables with History of Menstrual Irregularity

Features	Beta	Standard Error	p	Odds Ratio (95% CI)
Marital Status				
Single	Reference group			
Married	-.72	.34	.03	2.05 (1.04-4.04)
BMI				
Underweight	Reference group			
Normal weight	.26	.22	.25	1.29 (.83-2.02)
Overweight/obese	.36	.16	.03	1.43 (1.03-1.99)
Regular Exercise				
Yes	Reference group			
No	1.77	.21	.00	0.17 (0.11-0.26)
Smoking Habit				
No	Reference group			
Yes	.50	.16	.00	1.64 (1.19-2.27)
Regular Caffeine Consumption				
Yes	Reference group			
No	-.42	.18	.02	0.65(0.45-0.94)

BMI: Body Mass Index

Table 3. Dysmonorrhea Severity

Features (VAS)	$\bar{x} \pm SD$	n	%
Dysmonere severity	5.26±2.38		
Mild (1-3.9)		150	20.5
Medium (4-7.9)		456	62.3
Severe (8-10)		126	17.2

VAS: Visual Analogue Scale

Table 4. Logistic Regression Analysis of Independent Variables with Dysmenorrhea History

Features	Beta	Standard Error	p	Odds Ratio (95% CI)
BMI				
Underweight	Reference group			
Normal weight	-0.04	0.18	.79	0.95 (0.66-1.36)
Overweight/obese	0.78	0.13	.00	2.20 (1.70-2.85)
History of Dysmenorrhea in the Mother				
No	Reference group			
Yes	.82	.10	.00	2.28 (1.86-2.80)
Regular exercise				
Yes	Reference group			
No	.92	.12	.00	2.51 (1.95-3.22)

BMI: Body Mass Index

DISCUSSION

23.7% of the students reported irregularities and 40.5% reported dysmenorrhea. In a study conducted in Ethiopia, the dysmenorrhea rate was 64.7% (Azagew et al., 2020) and menstrual irregularity was 32.6% (Zeru et al., 2021). In the literature, the prevalence of irregular menstruation varies between 23.3% and 84.8% (Aram Aber, 2018; Karout et al., 2017; Thapa and Shrestha, 2015; Karout, 2015). The prevalence of dysmenorrhea has been reported to be up to 87 in India, East Sudan, Palestine, Ethiopia, Australia, and Nigeria (George and Bhaduri, 2002; Shiferaw et al., 2014; De Sanctis et al., 2016; Olowokere, et al., 2014; Abu Helwa et al., 2018; Abdel Aziem et al., 2011). Considering our findings, it is thought that the encountering of different rates in the mentioned studies may be because the samples of the studies have different characteristics. Because it has been reported in the literature that menstruation is affected by many factors such as genetics, socioeconomic and nutrition (Dars et al., 2014; Kwak et al., 2019; Said and Mettwaly, 2017).

In our findings, the risk of menstrual irregularity in students who are overweight is 1.43 times higher than those with underweight. The risk of menstrual irregularity in students without exercise habits is 0.17 times higher than those with exercise habits. In addition, the risk of menstrual irregularity in students with caffeine habit is 0.65 times higher than students without caffeine habit. The risk of menstrual irregularity in smokers is 1.64 times higher than in non-smokers. The risk of menstrual irregularity in single students was 2.05 times higher than in married students. In a study conducted in China in support of our findings, obesity was found to be associated with menstrual irregularities (Zhou and Yang, 2020). In a study conducted with women who are not athletes in Denmark, similar to our findings, it was determined that sedentary life increased menstrual cycle irregularity (Hahn et al., 2013; Uçar et al., 2015). In many studies, the fact that smoking (Barcelos et al., 2013; Nohara et al., 2011) and alcohol use (Hahn et al., 2013) are associated with menstrual irregularities is in line with our findings. Previous studies have shown a relationship

between marital status and menstrual disorders (Kadir et al., 2010; Chang et al., 2009). The reasons why being married reduces the prevalence of menstrual disorders are unclear (Allsworth et al., 2007; Lin et al., 2007). Previous studies have also shown that living alone in a new environment under socioeconomic status and stress is associated with menstrual disorders (Allsworth et al., 2007; Lin et al., 2007; Gast et al., 2010).

In our findings, the risk of dysmenorrhea was found to be 2.20 times higher in overweight/obese students than in underweight students, 2.28 times higher in those with a history of dysmenorrhea in the mother compared to those without risk of dysmenorrhea, and 2.51 times higher in those without a regular exercise habit compared to those with a risk of dysmenorrhea. Studies have reported that dysmenorrhea and a family history of dysmenorrhea is associated with dysmenorrhea, which supports our findings (Ju et al., 2014; Muluneh et al., 2018). While some studies reported that there was no relationship between BMI and dysmenorrhea (Jang et al., 2013; Tavallae et al., 2011), some studies reported an increased prevalence of dysmenorrhea in overweight or obese people similar to our findings (Nohara et al., 2011; Sharma et al., 2008). Muluneh et al. (2018) reported that physical activity had a statistically significant relationship with dysmenorrhea. Similarly, our findings are consistent with those of a systematic review of randomized controlled trials confirming that exercise reduces dysmenorrhea-related symptoms (Brown and Brown, 2017).

CONCLUSION

In addition to being overweight, not exercising regularly, caffeine and smoking habits, being single factors were found to be associated with menstrual irregularity. Factors such as being overweight, history of dysmenorrhea in the mother, and lack of exercise habits were also found to be associated with dysmenorrhea. University students of reproductive age should be given appropriate education about the effects of these factors. They should be told that these factors may be the underlying causes of menstrual irregularity and dysmenorrhea. It should also be noted that most of these factors have the

potential to improve reproductive health if they are reduced or eliminated by acquiring healthy lifestyle habits.

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None

Conflict of Interest

The authors declare no conflict of interest.

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