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ARAŞTIRMA / RESEARCH

Effect of dysmenorrhea on quality of life in university students: A case-control study

Üniversite öğrencilerinde dismenorenin yaşam kalitesi üzerine etkisi: Bir vaka-kontrol çalışması

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Abstract

Purpose: This study aimed to determine the effect of dysmenorrhea on quality of life in university students and the affecting factors.

Materials and Methods: This case-control study was conducted with 610 female students [300 with dysmenorrhea (case group), 310 without dysmenorrhea (control group)], who were studying at Bozok University in Yozgat, between September 2018 and December 2018. Data were collected with the Personal Information Form, Visual Analogue Scale and World Health Organisation Quality of Life Assessment-Bref.

Results: In students with dysmenorrhea, physical health, psychological health, social relationships, and environmental health subscales mean scores were significantly lower than those in the control group. Furthermore, the duration of menstrual bleeding, menstruation pattern, dysmenorrhea rating, body mass index, and smoking were determined to be statistically significant factors affecting the quality of life of students with dysmenorrhea.

Conclusion: Dysmenorrhea is considered to be a gynecological problem that negatively affects the quality of life. Healthcare professionals may contribute to enhancing the quality of life of students by providing training and consultation services regarding the treatment and management of dysmenorrhea.

Keywords: Dysmenorrhea, quality of life, university students

Öz

Amaç: Bu araştırmada üniversite öğrencilerinde dismenorenin yaşam kalitesi üzerine etkisi ve etkileyen faktörlerin belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Bu vaka kontrol çalışması Eylül- Aralık 2018 tarihleri arasında Yozgat Bozok Ünıversitesi'nde okuyan 610 kız öğrenci [300 dismenore olan (vaka grubu), 310 dismenoresi olmayan (kontrol grubu)] ile yürütülmüştür. Veriler Kişisel Bilgi Formu, Visual Analog Skalası ve Dünya Sağlık Örgütü Yaşam Kalitesi Ölçeği-Kısa Form ile toplanmıştır.

Bulgular: Dismenoresi olan öğrencilerin fiziksel sağlık, psikolojik sağlık, sosyal ilişkiler ve çevresel sağlık alt boyut puan ortalamaları kontrol grubundan istatistiksel olarak anlamlı düzeyde düşüktür. Ayrıca menstrual kanama süresi, menstruasyon düzeni, dismenore şiddeti, beden kitle indeksi ve sigara kullanımının dismenoresi olan öğrencilerde yaşam kalitesini etkileyen faktörler olduğu belirlenmiştir.

Sonuç: Dismenorenin öğrencilerin yaşam kalitesini olumsuz etkileyen jinekolojik bir problem olduğu söylenebilir. Sağlık çalışanları dismenorenin tedavisi ve yönetimi hakkında eğitim ve danışmanlık yaparak öğrencilerin yaşam kalitesini artırmaya katkı sağlayabilirler.

Anahtar kelimeler: Dismenore, yaşam kalitesi, üniversite öğrencileri

INTRODUCTION

Menstruation is a normal physiological process that begins in the adolescent period. In this period, women may experience various problems such as abnormal uterine bleeding, premenstrual syndrome and dysmenorrhea[1]. Dysmenorrhea is an important gynecological problem that affects many women in

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reproductive age[2]. Dysmenorrhea is a disorder characterized by pain that begins in the lower abdomen and spreads to the waist and legs before or during menstruation[3]. The pain starts a few days before menstruation and lasts 48–72 hours is accompanied by symptoms such as sweating, headache, decreased concentration, fainting, loss of appetite, diarrhea and fatigue[4]. It is reported in studies that dysmenorrhea is observed in women at rates ranging between 20 to 90% [5–8].

Dysmenorrhea and accompanying symptoms negatively affect women's daily activities, reduce their work quality, prevent them from going to school or work, and cause social and economic losses[9–13]. It is stated in the literature that students with dysmenorrhea had social dysfunctions, lower academic performance, affected well-being and decreased quality of life[14,15].

Although dysmenorrhea significantly affects women's quality of life, it is neglected in clinical practice and research. It is reported in the literature that women with dysmenorrhea do not receive adequate counseling and medical help. Healthcare professionals screening women for symptoms of dysmenorrhea and taking the necessary interventions can contribute to improving the quality of life[7,16]. Although primary dysmenorrhea is quite common in adolescent girls, there are a limited number of studies examining the effect of dysmenorrhea on quality of life[14,15,17]. Therefore, it was aimed to determine the effect of dysmenorrhea on quality of life in university students and the affecting factors.

MATERIALS AND METHODS

This was a case-control study on 610 female students [300 with dysmenorrhea (case group), 310 without dysmenorrhea (control group)], who were studying at Bozok University in Yozgat, between September 2018 and December 2018.

The minimum sample size was calculated with the OpenEpi version 3, publicly available statistical software (http://www.openepi.com). In studies conducted in Turkey, *the rate of* dysmenorrhea among young girls *ranges between about* 55.5% and 89.4%[18,19]. Therefore, the sample size was calculated alpha= 0.05, beta= 0.20 and 1-b= 0.80, p= 0.7 (0.6–0.8) and based on the calculations, 162 individuals were assigned to each group. In order to achieve the minimum sample size, among the female students who studied two faculties at Bozok University central campus (N= 782), between September 2018 and December 2018 and met the inclusion criteria, 300 female students with dysmenorrhea were included in the study. The control group (310 female students) included female students who had matching individual characteristics with the dysmenorrhea group but did not report painful menstruation.

The inclusion and exclusion criteria for this study were based on the objectives of the study and the literature review. The inclusion criteria were as follows: agreeing to participate in the study, being female, being older than 18 years, being single. The exclusion criteria were as follows: having gynecological diseases (polycystic ovarian syndrome, pelvic trauma, etc.), using oral contraceptives. One hundred eighteen students who refused to participate were excluded from the study, and fiftyfour female students were excluded based on the exclusion criteria.

The study protocol was designed in compliance with the principles of the Declaration of Helsinki. Prior to data collection, necessary approvals and permissions were obtained from the Bozok University Clinical Research Ethics Committee (Decision date and no. 2017-KAEK-189-2018.3.21-04) and Rectorate of Bozok University, respectively. Participation in the study was voluntary. After the participants were informed on the purpose of the study, their written informed consent was obtained.

Procedure

The researcher informed the participants about the purpose and importance of the study. Students who accepted an interview and gave their written consent were led to a classroom where they answered the questionnaire. Data collection tools were filled in through one-to-one interviews by same female interviewer. The implementation of data collection tools took about 30-40 minutes.

Data was collected with the Personal Information Form, Visual Analogue Scale, and World Health Organization Quality of Life Assessment- Brief Version.

Measures

Personal Information Form

The form consists of 14 questions on socio-demographic characteristics such as age, height, weight, smoking and alcohol consumption, and menstrual characteristics such as age of menarche,

menstrual bleeding duration, menstruation pattern, presence of dysmenorrhea, severity of dysmenorrhea, other disorders, effect of dysmenorrhea on daily life and practices and methods used to relieve pain. Body mass index (BMI) was calculated based on the verbal statements of participants and was calculated as weight in kilograms divided by the square of height in meters (kg/m^2). BMI assessed according to the classification of World Health Organization (WHO).

Visual Analogue Scale (VAS)

It is a horizontal or vertical line used to evaluate the severity of pain, usually 10-cm long, which starts with "no pain" and ends with "unbearable pain". Intervals for pain-intensity are evaluated as 1–3 mild pain, 4–6 moderate pain, 7–10 severe pain. The person marks which area on the VAS line best represents their current pain and the marked line is used as numeric data to determine the level of perceived pain. VAS is a reliable and valid method used in studies to evaluate the severity of primary dysmenorrhea[20].

World Health Organisation Quality of Life Assessment-Bref (WHOQOL-Bref-TR)

Health-related quality of life scale was developed by WHO and its validity and reliability study in Turkish was performed in 1999 by Eser et al[21]. The Cronbach's alpha value of the Turkish version of the scale was 0.83 for the physical well-being, 0.66 for the psychological well-being, 0.53 for the social well-being, and 0.73 for the environmental well-being. The scale has two versions: long (WHOQOL–100) and short (WHOQOL–27). The scale measures physical, psychological, social and environmental well-being and consists of 26 items. When Turkey version used (27. item is a national question), environmental area score is called environment-TR. In the scale, each subscale is calculated separately and obtainable scores from the subscales range between 4–20. As the score increases, quality of life increases[21]. In the present study, the Cronbach's alpha value was calculated for the physical, psychological, social and environmental well-being as 0.83, 0.78, 0.68, and 0.70 respectively.

Statistical analysis

To analyze the data, the SPSS 16.0 software (SPSS, Inc., Chicago, IL, USA) was used. Kolmogorov-Smirnov test was used to analyze the differences between female students with dysmenorrhea and without dysmenorrhea. Data were normally distributed. Descriptive statistics were generated for all variables. The case and control groups were compared using chi-square test for categorical data, and t-test for continuous data. The independent-samples t test and one-way ANOVA were used for the variables affecting the quality of life in female students with dysmenorrhea. For the significance level of the statistical tests, $p<0.05$ was used.

RESULTS

Of the students with dysmenorrhea, 55.3% of were ≥21 years old (min: 18, max: 27), 74.3% of menarche age were >12, 69.7% of menstrual bleeding duration were ≤6 days, 85.0% had regular menstrual patterns, 88.0% of BMI were underweight/normal, and 81.3% of were non-smokers. Of the students in the control group, 51.3% were ≥21 years old (min: 18, max: 28), 72.9% of menarche age were >12, 69.4% of menstrual bleeding duration were ≤6 days, 81.9% had regular menstrual patterns, 89.0% of BMI were underweight/normal, and 80.3% of were non-smokers. No statistically significant differences were determined between the case and control groups in terms of their socio-demographic variables ($p>0.05$) (Table 1).

Menstrual characteristics of students with dysmenorrhea were presented in Table 2. 43.0% of the students stated that they had severe pain during the menstrual period. Besides dysmenorrhea, the most common symptoms of the students were irritability (71.7%), breast tenderness (52.3%), fatigue (47.7%), and anxiety/depression (44.0%). 78.7% of the students reported that dysmenorrhea restricted their daily life activities, 70.7% of them restricted their social relationships, and 74.3% of them were absenteeism due to dysmenorrhea. 86.7% of the students stated that they used various methods to reduce the pain, 72.7% of them used nonsteroidal anti-inflammatory drugs, and 50.7% of them used relaxation methods.

Table 3 shows the comparison of quality of life scale scores of students with or without dysmenorrhea. In students with dysmenorrhea, physical health, psychological health, social relationships, and environmental health subscales mean scores were significantly lower than those in the control group ($p<0.001$). The distribution of quality of life according to some characteristics of students with dysmenorrhea were given in Table 4. As is seen on the table 4, physical health mean score was statistically significantly lower in students whose menstrual bleeding duration were ≥7 days, physical

and psychological health mean scores were lower in students who had irregular menstrual patterns, physical, psychological, environmental health, and social relationships mean scores were lower in students who had severe dysmenorrhea. Also, physical health, psychological health, social relationships mean scores were significantly lower in students whose BMI were overweigh, physical and psychological health mean scores were lower in smoking students ($p<0.05$)

Table 1. Comparison of characteristics in students with and without dysmenorrhea

Characteristics n (%)	With dysmenorrhea (n=300)	Without dysmenorrhea (n=310)	Total sample (n=610)	p-value
Age (years)				
≤20	134 (44.7)	151 (48.7)	285 (46.7)	0.179[a]
≥21	166 (55.3)	159 (51.3)	325 (53.3)	
Age of menarche (years)				
≤12	77 (25.7)	84 (27.1)	161 (26.4)	0.379[a]
>12	223 (74.3)	226 (72.9)	449 (73.6)	
Menstrual bleeding duration (days)				
≤6	209 (69.7)	215 (69.4)	424 (69.5)	0.534[a]
≥7	91 (30.3)	95 (30.6)	186 (30.5)	
Menstruation pattern				
Regular menstruation	255 (85.0)	254 (81.9)	509 (83.4)	0.182[a]
Irregular menstruation	45 (15.0)	56 (18.1)	101 (16.6)	
BMI				
Underweight/normal	264 (88.0)	276 (89.0)	540 (88.5)	0.392[a]
Overweight	36 (12.0)	34 (11.0)	70 (11.5)	
Smoking				
Non smoker	244 (81.3)	249 (80.3)	493 (80.8)	0.415[a]
Current smoker	56 (18.7)	61 (19.7)	117 (19.2)	

SD, standard deviation; [a] $p > 0.05$ indicates significant difference, according to chi-square test

Table 2. Menstrual characteristics of students with dysmenorrhea

Characteristics	With dysmenorrhea (n=300) n(%)
Dysmenorrhoea rating	
Mild (1–3)	69 (23.0)
Moderate (4–6)	102 (34.0)
Severe (7–10)	129 (43.0)
Other discomforts[a]	
Irritability	215 (71.7)
Breast tenderness	157 (52.3)
Fatigue	143 (47.7)
Anxiety/ depression	132 (44.0)
Headache	85 (28.3)
Skin problems	78 (26.0)
Distractibility	54 (18.0)
Nausea	42 (14.0)
Diarrhea	34 (11.3)
Limitation of daily activities due to dysmenorrhea	236 (78.7)
Limited social relations due to dysmenorrhea	212 (70.7)
Course absenteeism due to dysmenorrhea	223 (74.3)
Application to relieve pain	260 (86.7)
Methods used to relieve pain (n = 260)[a]	
NSAIDs	218 (72.7)
Relaxation methods	152 (50.7)
Application of heat	75 (25.0)
Massage	40 (13.3)
Walking/exercising	19 (7.3)

NSAIDs, nonsteroidal anti-inflammatory drugs; [a] Participants mentioned more than 1 option

Table 3. Quality of life scale scores of students with or without dysmenorrhea

Variables (mean ± SD)	With dysmenorrhea	Without dysmenorrhea	t	p-value
Physical health	12.95±1.94	14.94±1.86	12.89	<0.001
Psychological health	12.94±2.66	13.98±2.11	5.33	<0.001
Social relationships	12.63±3.01	13.53±2.84	3.81	<0.001
Environmental health	12.46±2.17	13.60±1.89	6.86	<0.001

SD, standard deviation

Table 4. Distribution of quality of life according to some characteristics of students with dysmenorrhea

Characteristics (Mean ± SD)	n	Physical Health	Psychological Health	Social Relationships	Environmental Health
Age (years)					
≤20	134	13.14±1.89	12.876±2.88	12.80±3.22	12.35±2.27
≥21	166	12.79±1.98	13.01±2.48	12.49±2.83	12.55±2.09
p-value[a]		p= 0.128	p= 0.647	p= 0.368	p= 0.415
Menstrual bleeding duration (days)					
<6	209	13.19±1.71	13.09±2.62	12.65±2.94	12.59±2.09
≥7	91	12.39±2.30	12.72±2.77	12.58±3.18	12.16±2.34
p-value[a]		p= 0.001	p= 0.349	p= 0.865	p= 0.116
Menstruation pattern					
Regular	255	13.05±1.87	13.14±2.47	12.75±3.03	12.51±2.12
Irregular	45	12.36±2.26	11.80±3.39	11.94±2.82	12.15±2.45
p-value[a]		p= 0.029	p= 0.002	p= 0.096	p= 0.302
Dysmenorrhoea rating					
Mild (1–3)	69	13.76±1.89	13.97±2.09	13.25±3.05	13.13±2.11
Moderate (4–6)	102	13.57±1.52	13.55±2.17	12.94±2.65	12.59±1.99
Severe (7–10)	129	12.02±1.89	11.91±2.93	12.05±3.18	12.00±2.25
p-value[b]		p= <.001	p= <.001	p= 0.001	p= 0.012
BMI					
Underweight/normal (≤24.99kg/m^2)	264	13.08±1.83	13.20±2.43	12.81±2.98	12.52±2.12
Overweight (25.00-29.99 kg/m^2)	36	11.95±2.41	11.03±3.46	11.25±2.91	12.00±2.52
p-value[a]		p= 0.001	p< 0.001	p= 0.003	p= 0.173
Smoking					
Non smoker	244	13.09±1.86	13.19±2.43	12.75±3.00	12.53±2.10
Current smoker	56	12.34±2.19	11.83±3.32	12.07±3.04	12.17±2.48
p-value[a]		p= 0.010	p= 0.001	p= 0.124	p= 0.276

SD, standard deviation; [a] Independent-samples t test; [b] One-Way ANOVA

DISCUSSION

The dysmenorrhea, which is defined as a painful menstruation, because the pain is subjective, it is difficult to define its severity. In this present study, 43.0% of students reported severe pain, and 34.0% of them reported moderate pain. Similarly, 55.8% of young girls in a study conducted in Jordan[10], 89.1% of girls in a study conducted in Egypt[11] and 81.7% of girls in a study conducted in Saudi Arabia[22] reported severe or moderate pain. These results show that dysmenorrhea is at a considerable level in young girls. It was also determined in this study that irritability, breast tenderness, fatigue and anxiety/depression are the most common symptoms suffered by students in addition to dysmenorrhea. Significant physiological and hormonal changes occur during menstrual period and such changes cause various symptoms. In the literature, it is stated that fatigue, headache, irritabilility, anxiety and breast tenderness are the most common problems[11,23,24]. Therefore, the medical screening of young girls for dysmenorrhea symptoms and implementation of necessary

interventions by healthcare professionals becomes highly important.

The majority of students in the study reported that dysmenorrhea restricts their daily activities and social relationships and causes absenteeism from school. In a study conducted by Chang and Chen (2008) with Taiwanese students revealed that dysmenorrhea affected their daily life activities, academic performance and social lives[25]. In a similar study by Rakhshaee (2014), it was reported that absenteeism of university students was higher as the intensity of pain increased and their daily life activities and social lives were restricted[26]. All of these results support that dysmenorrhea is an important health problem that has a negative impact on the lives of young girls in many aspects. This shows that it is highly important to identify young girls with dysmenorrhea and provide them with training and consultation on effective coping and treatment methods.

In this study, it was determined that approximately 87% of students used pharmacological and/ or non-pharmacological methods to reduce dysmenorrhoea, and the most used method was nonsteroidal anti-inflammatory drugs. In other studies, it is stated that students use pharmacological and non-pharmacological methods together to reduce dysmenorrhea[10,27,28] and non-steroidal anti-inflammatory drugs drugs are commonly used[29]. In line with these results, it can be said that it is necessary to educate young girls who have dysmenorrhoea about safe drug use and effective relaxation methods.

In this study, students with dysmenorrhoea had lower quality of life than those without dysmenorrhea. This is an expected result, dysmenorrhea affects young girls not only physically, but also emotionally and socially, and paves the way for a lower quality of life. Similarly, Unsal et al. (2010) determined that dysmenorrhea is an important problem that reduces all areas of quality of life in their study with Turkish university students with and without dysmenorrhoea[17]. In a study investigating the effect of symptoms in menstrual period on quality of life, it was found that dysmenorrhea is the most important symptom reducing the quality of life[30]. Thus, the purpose of dysmenorrhea treatment should be not only to reduce pain, but also to increase the quality of life which is an indicator of physical, emotional and social aspect of life.

This study revealed that the duration of menstruation, menstrual pattern and severity of dysmenorrhea are factors that decrease the quality of life. It can be said that this finding is in line with the literature. Likewise, Kocaoz et al. found a negative relationship between the duration of menstruation and quality of life in their study[31]. Lukes et al. also determined that participation in social activities decreased as bleeding during menstruation increased[32]. Irregular menstrual cycle, excessive bleeding, and severe pain can cause physical, emotional, social and behavioral changes, leading to decreased quality of life. In order to assist young girls cope with such problems, they should be asked about their menstruation pattern, pain intensity, attempts to reduce the pain and how the pain affected their lives.

Other factors that reduce the quality of life in students with dysmenorrhea are smoking and being overweight. In the literature, obesity and smoking are reported to be risk factors for dysmenorrhea[33-36]. Sakai et al. (2011) determined that smokers' menstrual cycle was affected negatively, and smokers experienced more premenstrual phase symptoms such as pain, concentration impairment, water retention, mood and behavioral changes compared to non-smokers[37]. These symptoms experienced by smokers during menstruation period may reduce the quality of life of individuals.

This study has some limitations. The first limitation is its cross-sectional design. The second limitation is that it cannot be generalized into all university students in Turkey because it was conducted in one university.

In this study, it was found that half of the students with dysmenorrhea experienced severe pain, dysmenorrhea restricted daily life activities and social relationships and caused school absenteeism. It was determined that dysmenorrhea is an important factor that negatively affects all aspects of quality of life. In addition, the duration of menstrual bleeding, menstruation pattern, dysmenorrhea rating, body mass index and smoking were determined to be statistically significant factors affecting the quality of life of students with dysmenorrhea. In the light of these findings, healthcare professionals should evaluate university students for dysmenorrhea symptoms, and provide training and counseling services to students with dysmenorrhea. Moreover, longitudinal studies with a larger sample may be recommended to explain the causal relationship between dysmenorrhea and quality of life, and to generalize the results.

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