ARAŞTIRMA / RESEARCH

Effect of dysmenorrhea severity on social and school lives of high school students

Dismenore şiddetinin lise öğrencilerinin sosyal ve okul yaşamlarına etkisi

Ferdane Koçoğlu Taş[1] [ID], Handan Zincir[2] [ID]

[1]Niğde Ömer Halisdemir University, Niğde Zübeyde Hanım School of Health, Nursing Department, Department of Public Health Nursing, Niğde, Turkey,
[2]Erciyes University Health Sciences Faculty, Nursing Department, Public Health Nursing, Kayseri, Turkey.

Abstract

Purpose: Dysmenorrhea can lead to school absenteeism by negatively affecting individuals' productivity, working and life quality, and school performance. This study examined the effects of the frequency and severity of dysmenorrhea in high school students on their social and school life.

Materials and Methods: The universe of this study, a cross-sectional design, consists of 5734 female students who attended the 9th, 10th, 11th and 12th grades between July 2016 and March 2017. One thousand five hundred students were chosen by random sampling method. The study data were collected by face-to-face interview using Descriptive Information, Visual Analog Scale, and Dysmenorrhea Diagnosis Form.

Results: It was determined that 87.6% of the students experienced pain during menstruation, and 61.9% of these students had primary dysmenorrhea. It was determined that the severity of pain and duration of attendance experienced by the students during this period negatively affected school attendance, social life, and daily life.

Conclusion: It was ascertained that primary dysmenorrhea, experienced widely by students, negatively impacts their social and school lives.

Keywords: Menstrual pain, effects, school, students

Öz

Amaç: Dismenore, bireylerin üretkenliğini, çalışma ve yaşam kalitesini, okul performansını olumsuz etkileyerek okul devamsızlığına yol açabilmektedir. Bu çalışmada lise öğrencilerinde dismenore sıklığı ve şiddetinin sosyal ve okul yaşamları üzerindeki etkileri incelenmiştir.

Gereç ve Yöntem: Kesitsel desende olan bu araştırmanın evrenini Temmuz 2016 ile Mart 2017 tarihleri arasında 9, 10, 11 ve 12. sınıflara devam eden 5734 kız öğrenci oluşturmaktadır. Rastgele örnekleme yöntemi ile bin beş yüz öğrenci seçilmiştir. Araştırma verileri Tanımlayıcı Bilgiler, Görsel Analog Skala ve Dismenore Tanı Formu kullanılarak yüz yüze görüşme yoluyla toplanmıştır.

Bulgular: Öğrencilerin %87.6'sının adet sırasında ağrı yaşadığı ve bu öğrencilerin %61.9'unun primer dismenore yaşadığı belirlendi. Öğrencilerin bu dönemde yaşadıkları ağrı şiddeti ve devam süresinin okula devamı, sosyal yaşamı ve günlük yaşamı olumsuz etkilediği belirlendi.

Sonuç: Öğrencilerin yaygın olarak yaşadığı primer dismenorenin sosyal ve okul hayatlarını olumsuz etkilediği belirlendi.

Anahtar kelimeler: Adet ağrısı, etkileri, okul, öğrenciler

INTRODUCTION

Dysmenorrhea, which adversely affects young girls in the adolescent period, is defined as painful menstruation[1]. Primary dysmenorrhea, defined as painful menstrual bleeding, is a common gynecological condition due to hormone secretion without pelvic pathology [2]. When the studies on dysmenorrhea prevalence are analyzed, it can be seen that the lowest rate is 45.3%, and the highest rate is 90%[3-6]. Dysmenorrhea frequency is between 28% to 86.9% in studies carried out on high school students[3,

[7-9]. Approximately 5-14% of women experience pain due to primary dysmenorrhea. Because of this pain, work and school stay away from their lives[10-12]. It is conferred that the absenteeism rate of students due to dysmenorrhea is between 18.6% to 80.6%[3, 4,9, 13-15]. It was ascertained that 46% of adolescents' absence rate, suffering from dysmenorrhea, was half or full day, while 36% was two to three days, and in 18% was four or more days[4]. It is stated that young girls, who cannot fulfill day-to-day activities due to dysmenorrhea, prefer non-pharmacological methods such as sleeping/resting, hot application, hiking, etc[16,17]. These methods can be recognized as the reasons for absenteeism. The same applies to similar cultures, as well. 10% to 52% of students are known to be absent from school due to dysmenorrhea, while being negatively affected by their daily, social, academic, and sports activities, too[4, 5].

In cases where dysmenorrhea pain is intense, it can cause deterioration in body image and daily activities, while it can reduce the productivity and quality levels of work-life and self-confidence with deterioration in social relations. Thus, dysmenorrhea is an important reproductive and public health problem that affects the individual's school life, academic success, and participation in social life. Although primary in high school students rated the prevalence of dysmenorrhea, the severity of pain, studies examining the effects on daily activities, school attendance, and social life are limited. Therefore, it is thought that the study results will be important in providing accurate and effective school health and reproductive health services. In line with this information, this study was conducted to examine the effects of the frequency and severity of dysmenorrhea seen in high school students on their social and school lives.

MATERIALS AND METHODS

Before collecting the study data, ethics committee approval was obtained from the University Ethics Committee (decision number: 2017/01-01, date:13.01.2017). Also, written institutional permissions were obtained from the Provincial Directorate of National Education and High Schools. For the students to participate voluntarily, verbal consent was obtained by giving information about the purpose of the study.

This study is a cross-sectional study, and the research population consisted of 5734 students studying at 17 high schools between 2016 and 2017. The population

was taken as 5734 people for calculating the sample size, taking the confidence interval as 0.05 and dysmenorrhea frequency as 72.2%[9]. The size of the sample was designated to be 400, as a minimum. It aimed to reach 1500 people within the sample size to increase the reliability of the study while contacting more students.

The students having the following characteristics were included in the study: (1) Experiencing menstruation once in 21 to 35 days and not having intermediate menstrual bleeding within the last six months, (2) Not having any disability on seeing, hearing, cognitive and psychiatric communication, which may lead them not to answer the research questions, (3) Not using drugs continuously due to a chronic disease, (4) Neither having a history of gynecological operation nor being diagnosed with any gynecological disorder, (5) Accepting to be involved in the study.

Measures

The questionnaire form was used as a data collection tool in the research. Descriptive information and Dysmenorrhea Diagnosis Form (DDF) are included in the questionnaire.

Descriptive information form

This from includes age, age at menarche, duration of menstruation, and there are questions about additional problems experienced.

Dysmenorrhea Diagnosis Form

In the Dysmenorrhea Diagnosis Form, there are questions about the presence of pain, its severity, onset time, region, problems experienced, use of painkillers, daily activities, social life, and school absenteeism. Also, students have questions prepared by the researchers in line with the literature to diagnose primary dysmenorrhea[3, 4, 7, 9, 15]. Criteria for making a diagnosis of primary dysmenorrhea are as follows: Dysmenorrhea starting within a short time after menarche (6 months-2 years); having no pelvic pathology; cramps on the suprapubic area in general (lumber, inguinal and lower abdomen), which start a few hours before or during menstrual bleeding, while ending within 48 to 72 hours[18-20]. These two chapters comprise 37 questions. The questions in the form were prepared for identifying the reasons that might affect the studying process while leaving the students with such characteristics out of the study group. When the data of 1500 students participating in our

study were examined, it was determined that 1314 students had pain during menstruation, and 928 (61.9%) students had primary dysmenorrhea following the specified criteria. While evaluating the effect of dysmenorrhea on school and social life, 572 (38.1%) people without primary dysmenorrhea were not included in the statistical calculation.

Visual Analog Scale

Visual Analog Scale (VAS) is a patient pain measurement scale, which has (0) for indicating "no pain" while having the sharp pain on the other end, over 10 cm of a ruler. It is stated that numerical scales provide convenience in defining, scoring, and recording the severity of pain. Also, the VAS is better than other unidimensional scales in assessing the severity of pain reported to be sensitive and reliable[30]. For example, in VAS, 1-3 cm was recognized as mild, 4-7 cm was moderate, and 8-10 cm was severe pain[21]. In a study conducted in Turkey, it is stated that the scores obtained from the VAS can be used to describe the pain of dysmenorrhea as mild, moderate, or severe[27]. Our study evaluated the severity of dysmenorrhea pain as mild, moderate, and severe at the beginning of menstruation, after four hours, and after eight hours.

The questionnaire forms were filled by researchers having face-to-face interviews with the students selected randomly (it is three one), between October 2016 to March 2017, thus specifying the pain level via VAS. The data was collected with personal notification made to the participants. It takes about 30 to 40 minutes to fill the forms.

Statistical analysis

The data were analyzed in Statistical Package for the Social Sciences for Windows 22 software (SPSS 22.0 for Windows) program, statistical analysis, number, percentage, Mann-Whitney U test, Kruskal-Wallis test, ANOVA, and logistic regression analysis were applied. Logistic regression analysis was used to determine the impact of primary dysmenorrhea on school and social life. Mann-Whitney U test, Kruskal-Wallis test, and ANOVA tests were used to compare independent variables. Students, who stated that school life, absenteeism, relations with the environment, and daily activities were not affected in the logistic regression, were taken as the reference group. The significance level was accepted as 0.05 in statistical tests.

RESULTS

The mean age of the students is 16.37 ± 1.17. The first menarche age of 83.3% of the students was between 12 and 14, while 73.3% of the students' menstrual duration was between 3 to 6 days. In a question where the complaints were asked in addition to dysmenorrhea, in which the students had the option to select more than one, the following complaints were seen: fatigue (63.6%), headache (37.7%), insomnia (32.7%), sweating (25.9%), loss of appetite (21.3%), nausea (17.0%) and dizziness (16.8%).

Table 1 shows the distribution of students by their characteristics concerning dysmenorrhea. Considering the cramps/pain of students during menstruation, 87.6% of the students were confirmed to have cramps/pain (42.8% during the menstrual cycle, 44.8% were having the same from time to time), and 12.4% were not. There are certain criteria to be met for the pain suffered during menstruation, called primary dysmenorrhea. According to these criteria, 928 (61.9%) of 1314 students were confirmed to have primary dysmenorrhea within the sample. When the pain starting period of the students was analyzed, it was confirmed that 43.3% of the students had cramps since the beginning of menarche, while 34.6% of them were having the same in 6 months-2 years after the first menstrual period.

Considering the continuance of such complaints of the students, it was seen that 51.2% of the students had cramps in the first 2-3 days of menstruation, while 37.4% had the same in the first day of menstruation, and 11.4% of them had the cramps and pains during the entire menstruation. It can be seen that the cramps start with (41.9%) and within a few hours before menstrual bleeding (30.4%), which is felt denser in the lower abdomen (65.9%), inguinal (45.7%), and lumbar (42.9%).

Asking the most commonly faced problems during menstruation, 51.8% of the students answered cramps/pain, followed by irritability 20.3%, and fatigue 17.5%. 53.2% of the students, who were confirmed to have primary dysmenorrhea, mentioned using painkillers, while 46.8% were not taking any. The following results were obtained when the data were analyzed: 41.7% moderate, 29.9% mild, and 22.9% severe in the beginning; 50.3% moderate, 26.7% mild, and 15.5% severe within 4 hours; 35.6% mild, 33.4% moderate and 16.3% severe within 8 hours. (Table 1)

Table 1. Characteristics of dysmenorrhea

Variables	n	%
Pain in menstruation		
Yes	1314	*87.6*
No	186	*12.4*
Primary dysmenorrhea (n:1314)		
Yes	928	*61.9*
No	572	*38.1*
The pain starting period (n:1314)		
Beginning of menarche	569	*43.3*
Six months – 2 years after the first menstrual period	455	*34.6*
After an infection or surgery on the reproductive organs	16	*1.2*
In stress periods	274	*20.9*
Duration of pain (n: 1314)		
During the menstruation period	150	*11.4*
In the first 2-3 days of menstruation	673	*51.2*
First day of menstruation	491	*37.4*
Pain start time (n:1314)		
Two days before menstruation	363	*27.6*
A few hours before menstruation	400	*30.4*
With bleeding	551	*41.9*
Region of pain *		
Lower abdomen	989	*65.9*
Back region	180	*12.0*
Lumbar region	643	*42.9*
Inguinal region	686	*45.7*
Region of urination	152	*10.1*
Complaints during menstruation period		
Excessive Bleeding	84	*5.6*
Cramps/pain	777	*51.8*
Nausea Vomiting	25	*1.7*
Fatigue	263	*17.5*
Irritability	305	*20.3*
Smell	46	*3.1*
Using painkillers (n:928)		
Yes	494	*53.2*
No	434	*46.8*
Pain levels (VAS) (in the beginning) (n:1419)		
Mild (Between 1-3)	449	*29.9*
Moderate (Between 4-7)	626	*41.7*
Severe (Between 8–10)	344	*22.9*
Pain levels (VAS) (after 4 hours) (n:1387)		
Mild (Between 1-3)	400	*26.7*
Moderate (Between 4-7)	755	*50.3*
Severe (Between 8–10)	232	*15.5*
Pain levels (VAS) (after 8 hours) (n: 1279)		
Mild (Between 1-3)	534	*35.6*
Moderate (Between 4-7)	501	*33.4*
Severe (Between 8–10)	244	16.3

* More than one answer

In Table 2, primary dysmenorrhea's effect on the daily activities, relations with the environment, school life, and students' absenteeism are analyzed. It can be seen that 88.5% of the students having primary dysmenorrhea were affected in their daily activities, while 79.8% of them were affected in terms of their relationships with the environment and communication. When the effect of primary dysmenorrhea on school life was analyzed, it was ascertained that 22.2% of the students were not affected, 27.8% of the students were feeling unwilling to study, 23.1% of them were thinking the pain, 20.2% of the students could not focus their attention, and 6.8% of them had trouble in learning. Within the scope of primary dysmenorrhea's effect on absenteeism, it was confirmed that 34.4% of the students were absent for half a day, followed by one day (46.3%) and two days (15.3%) (Table 2).

Table 2. Effect of primary dysmenorrhea on social life and school

Variables	n	%
The effect of primary dysmenorrhea on the daily activities (n:928)		
Yes	821	88.5
No	107	11.5
The effect of primary dysmenorrhea on relationships with environment/communication (n:928)		
Yes	740	79.8
No	188	20.2
The status of primary dysmenorrhea affecting school life (n: 928)		
No, not affected	206	22.2
Unwilling to study	258	27.8
Not focus their attention	187	20.2
Trouble in learning	63	6.8
Thinking the pain	214	23.1
Effect of primary dysmenorrhea on school absenteeism (n:928)		
Yes	523	56.4
No	405	43.6
Duration of the absence due to primary dysmenorrhea (n: 523)		
Half a day	180	34.4
One day	242	46.3
Two days	80	15.3
Three days and over	21	4

When the effect of pain duration on absenteeism is analyzed, it is conferred that the students sometimes (46%) and always (36.5%) had trouble going to school. On the other hand, the first 2-3 days (38.1%) and the first day (56.4%) of the menstruation period did not affect the absenteeism. A statistically significant difference was found between the groups regarding pain duration and absenteeism (p<0.05). When the effect of the pain period on daily activities is analyzed, it can be seen that 47.6% of the students were affected, while 39.7% were not. The students stated that their daily activities were sometimes affected during the first 2-3 days of menstruation (45.1%) and the first day (59.5%). The difference between the groups was significant in terms of the menstruation period and its effect on daily activities (p<0.05). When the effect of pain duration relations with the environment is analyzed, it can be seen that the students were sometimes (39.7%) and on the first day of menstruation (46.7%) affected. The difference between the groups regarding pain duration and relations with the environment was statistically significant (p<0.05). When the effect of pain on school life was analyzed, the students stated that they were sometimes (46%) and always (46%) affected. They are affected during the first 2-3 days (51.4%) and on the first day of menstruation (43.3%). The difference between the groups in terms of pain duration and its effect on school life was statistically significant (p<0.05).

In Table 3, a logistic regression analysis was performed on students having and not having primary dysmenorrhea in terms of their school lives, absenteeism, relations with the environment, and the daily activities affected. It was found to be 3.41 times higher in students having primary dysmenorrhea within the scope of their school lives than those not

having the same, which was significant (%95 Cl: 1.17-9.90). It was found to be 3.61 times higher in students having primary dysmenorrhea within the scope of absenteeism than those not having the same, which was also significant (%95 Cl: 1.00- 12.99). It was found to be 1.76 times higher in students having primary dysmenorrhea within the scope of their

social lives than those not having the same, which was not significant (%95 Cl: 0.58-5.28). Finally, it was found to be 4.03 times higher in students having primary dysmenorrhea within the scope of their daily activities than those not having the same, which was significant (%95 Cl: 1.38-11.74) (Table 3).

Table 3. Logistic regression analysis results in terms of the effect of primary dysmenorrhea on school life, absenteeism, relations with the environment, and daily activities

Variables**	β	Standard Error	*p-value*	Odds Ratio	*95%Cl**
School life Yes	1.228	0.543	0.024	3.41	1.17-9.90
Absenteeism Yes	1.284	0.654	0.049	3.61	1.00-12.99
Relations with environment Yes	0.565	0.561	0.314	1.76	0.58-5.28
Daily activities Yes	1.396	0.545	0.010	4.03	1.38-11.74

*Confidence Interval
** Students, who stated that school life, absenteeism, relations with the environment, and daily activities were not affected, were taken as the reference group.

DISCUSSION

When evaluating the pain level, the students define the pain level as moderate at the beginning of menstruation, moderate in the first four hours, and mild in the first 8 hours. It can be seen that the pain level of those, defined as sharp in the first 4 and 8 hours, is reduced afterward. In various studies, where the pain level is analyzed, it is stated that the pain level average is between 5 to 7 (moderate) in the beginning[8,22,23]; 4 to 5 (moderate) after four hours[8,22] and 2 to 3 (mild) after eight hours[22]. These findings are in parallel with the research results. 87.6% of the students participating in the study state to have cramps/pain at the beginning of the menstruation period. The ratio of students, who stated to have cramps/pain and were diagnosed with primary dysmenorrhea, was 61.9%. This ratio was found to be 78%[3], 86.9%[7,] and 72.7%[9] in dysmenorrhea prevalence studies carried out on students. Among the reasons for the difference in the prevalence of dysmenorrhea, the age of menarche, differences in dysmenorrhea specification criteria, and primary dysmenorrhea can be considered effective. In a study carried out on 1546 people in Canada, 18 and older, the primary dysmenorrhea prevalence was 60%[24]. According to our study results, it can be said that primary dysmenorrhea is a commonly seen health problem suffered by adolescents.

It was ascertained that students diagnosed with primary dysmenorrhea are substantially affected in their daily activities and relations with the environment. The same students, having primary dysmenorrhea, also experience reluctance, concentration impairment, think the pain, and difficulty understanding the lesson within the scope of their school lives. In a study carried out by Yılmaz, 61.3% of the students suffered concentration impairment, while 81.8% were affected by their daily activities due to dysmenorrhea[28]. In studies having similar results with our research findings, it is stated that female students are negatively affected in terms of absenteeism in school, daily, social, academic, and sports activities due to dysmenorrhea[4,5].

It was ascertained that absenteeism rates of students were one day, half a day, two days, and three days and more due to primary dysmenorrhea, respectively. It can be said that absenteeism in school mainly occurs within the first two days. In a study carried out by Kaba, 72% of the female students become absent from school due to primary dysmenorrhea[29]. In another study carried out by Banikarim et al., the absenteeism rate of adolescents suffering from dysmenorrhea is half a day or one day for 46%, two to three days for 36%, and four and more for 18% of the students[4]. Various studies suggest the negative impact of this period in absenteeism in school[3, 9, 14,]

[15]. These studies are supporting the findings of our research.

Most of the students, stating the pain duration to occur on the first and the first 2 to 3 days of menstruation, which is one of the criteria for primary dysmenorrhea, selected "yes" and "sometimes" as the answer to questions on whether being affected in terms of their absenteeism, daily activities, relations with the environment and school lives. In a study carried out by Banikarim et al. with 706 Spanish adolescents, the dysmenorrhea rate was 85%, while also stating the negative effect on absenteeism, socialization, academic performance, and participation in sports activities[4]. It is also stated in this study that the absenteeism rate of these adolescents was 38% due to dysmenorrhea, while 59% experienced concentration impairment; 51% could not participate in sports activities; 50% could not be active in the learning process; 35% had trouble in doing their homework, and 46% experienced social ineffectiveness. Eryılmaz et al. stated that school performance, including relationships with parents and friends, was negatively affected during dysmenorrhea and as the level of pain increased[9]. In another study carried out by Oral et al. , the school performance is negatively affected due to dysmenorrhea within the scope of absenteeism and exam performance[25]. In the study carried out by Akinnubi, the students were affected by their academic performances and could not do any exercise during menstruation due to dysmenorrhea[26]. It is also stated that 41.7% of the students could not go to school, while 51.6% could not study[12]. In studies carried out by Potur et al., absenteeism rate increases for students after the pain level increases while limiting social activities, preventing them from participating in such activities, personal relations, and daily activities, which are similar to the results of our study[27]. Considering the effect of pain level on school life, absenteeism, relations with the environment, and daily activities, significant results were obtained in all areas.

In the study carried out by Yılmaz and Başer, where VAS and verbal category scales were used to measure dysmenorrhea level, the more the dysmenorrhea pain level increases, the more the school life and studying performances are negatively affected[12]. In the same study, it is stated that 22.9% of the students had a pain level of 6, while most of the students defined the pain level as severe and unbearable. It is also stated in a study carried out with a wide range of participants

in Canada, women with primary dysmenorrhea defined the pain level as moderate or severe. This study also stated that 51% of the patients were limited in their daily activities, while 17% could not go to school [24]. The literature states that the pain starts before a few hours or with the menstrual bleeding in primary dysmenorrhea[18-20]. For the pain felt within the first 8 hours, starting to feel the pain with menstrual bleeding has a significant effect. Therefore, it is possible to consider that the students' mechanisms to reduce the pain during this process are effective.

Ther are several limitations of study. Students may have been influenced by each other because they filled out the questionnaire in the classroom. Beside the sample size may be too small to be generalized.

It can be seen that the duration and level of pain due to dysmenorrhea lead to negative impacts on participating in social activities, fulfilling day-to-day activities, personal relations, absenteeism rate, and school lives. Therefore, school healthcare provision must be prioritized within this scope for students having dysmenorrhea to reduce the pain with effective methods and receive medical attention in certain situations. Furthermore, with regular training to be provided by school healthcare nurses, students will display positive behavioral changes to protect and improve their health on reproductive health.

REFERENCES

1. Zhu X, Bensoussan A, Zhu L, Qian J, Xu M, Zhou C et al. Primary dysmenorrhoea: A comparative study on Australian and Chinese women. Complement Ther Med. 2008;17:155-6.

2. Iacovides S, Avidon I, Baker FC. What we know about primary dysmenorrhea today: a critical review. Hum Reprod Update. 2015;21:762-78.

3. Proctor M, Farquhar C. Diagnosis and management of dysmenorrhoea. BMJ. 2006;332:1134-38.

4. Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhea on Hispanic female adolescents. Arch Pediatr Adolesc Med. 2000;154:1226-29.

5. Mazza D. Primary dysmenorrhea. Women's Health Medicine. 2006;3:207-10.

6. Aykut M, Günay O, Gün İ, Tuna R, Balcı E, Özdemir M et al. Biyolojik, sosyo-demografik ve nutrisyonel faktörlerin dismenore prevalansına etkisi. Erciyes Tıp Dergisi. 2007;29:393-402.

7. Erenel A, Şentürk İ. Sağlık meslek lisesi öğrencilerinin dismenore yaşama durumları ve dismenore ile baş etmeye yönelik uygulamaları. Hemşirelik Yüksekokulu Dergisi. 2007;48-60.

8. Al-Jefout M, Seham AF, Jameel H, Randa AQ, Luscombe G. Dysmenorrhea: Prevalence and ımpact on quality of life among young adult Jordanian females. J Pediatr Adolesc Gynecol. 2015;28:173-185.

9. Eryılmaz G, Özdemir F, Pasinlioglu T. Dysmenorrhea prevalence among adolescents in eastern Turkey: Its effects on school performance and relationships with family and friends. J Pediatr Adolesc Gynecol. 2010;23:267-72.

10. Weissman AM, Hartz AJ, Hansen MD, Johnson SR. The natural history of primary dysmenorrhoea: a longitudinal study. BJOG. 2004;111:345-52.

11. Bettendorf B, Shay S, Tu F. Dysmenorrhea: Contemporary perspectives. Obstet Gynecol Surv. 2008;63:597-603.

12. Yılmaz F, Başer M. Dismenorenin okul performansına etkisi. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi. 2016;5:29-33.

13. İnce N. Adolesan dönemde premenstruel sendrom. Türkiye Klinikleri Tıp Bilimleri Dergisi. 2001;21:369-373.

14. Potur D, Kömürcü N. Dismenore yönetiminde tamamlayıcı tedaviler. Hemşirelikte Eğitim ve Araştırma Dergisi. 2013;10:8-13.

15. Lee H, Choi TY, Myung CS, Lee MS. Herbal medicine Shaofu Zhuyu decoction for primary dysmenorrhea: a systematic review protocol. Syst Rev. 2016;5:9.

16. Taşcı DK. Evaluation of nursing students' premenstrual symptoms. TAF Prev Med Bull. 2006;5:434-43.

17. Erdoğan M, Özsoy S. Genç kızların dismenore için kullandığı nonfarmakolojik yöntemler. Maltepe Med J. 2012;4:13-4

18. Morrow C. Dysmenorrhea. Prim Care. 2009;36:19–32.

19. Taşkın L. Birth and women's health nursing. Ankara. System Ofset Printing. 2005;500-1.

20. Burnett M, Lemyre M. No. 345-Primary Dysmenorrhea Consensus Guideline. J Obstet Gynaecol Can. 2017;585-95.

21. Larroy C. Comparing visual-analog and numeric scales for assessing menstrual pain. Behav Med. 2002;27:179-81.

22. Chen HM, Chen CH. Effects of acupressure at the sanyinjiao point on primary dysmenorrhea. J Adv Nurs. 2004;48:380-7.

23. Polat A, Çelik H, Gurates B, Kaya D, Nalbant M, Kavak E et al. Prevalence of primary dysmenorrhea in young adult female university students. Arch Gynecol Obstet. 2009;279:527-32.

24. Burnett MA, Antao V, Black A, Feldman K, Grenville A, Lea R et al. Prevalence of primary dysmenorrhea in Canada. J Obstet Gynaecol Can. 2005;27:765-70.

25. Oral E, Kirkan ST, Yazıcı E, Gulec M, Cansever Z, Aydın N. Premenstrual symptom severity, dysmenorrhea, and school performance in medical students. Journal of Mood Disorders. 2012;2:143-52.

26. Akinnubi CF. Influence of dysmenorrhea and menorrhagia on academic performance among female students in Tertiary Institutions in Ondo State Nigeria. World Journal of Social Science. 2016;3:34-41.

27. Potur CD, Bilgin ÇN, Kömürcü N. Prevalence of dysmenorrhea in university students in Turkey: effect on daily activities and evaluation of different pain management methods. Pain Manag Nurs. 2014;15:768-77.

28. Yılmaz F. Ayak refleksolojinin dismenore ve okul performansına etkisi. Doktora tezi. Kayseri, Erciyes Üniversitesi, 2014.

29. Kaba H. Enterferansiyel akım ve mobilizasyonun primer dismenore üzerine etkilerinin karşılaştırılması. Yüksek Lisans Tezi. Ankara, Hacettepe Üniversitesi, 2007.

30. Aslan–Eti F. The assessment methods of pain. Cumhuriyet Üniversitesi Hemsirelik Yüksekokulu Dergisi. 2002;6:9-16.