International Journal of
Nursing Science Management & Patient Care

JScholar
Fostering Scholarly Communication

Research Article Open Access

The Relationship Between PMS Symptoms and Menstrual Attitudes Among University Students in Turkey

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Received Date: November 25, 2020 **Accepted Date:** December 25, 2020 **Published Date:** December 27, 2020

Citation: Gul Pinar [2020) The Relationship Between PMS Symptoms and Menstrual Attitudes Among University Students in Turkey. Int J Nur Man Pat Car 1: 1-8.

Abstract

Objective: The purpose of this research was to analyze the frequency of Premenstrual Syndrome [PMS) in Turkish university students and the effects of menstrual attitudes on PMS symptoms.

Methods: The cross-sectional study was carried out during December 1 to January 30, 2014 in Ankara, Turkey. The study population was 503 female students. Data were collected using a Survey Form, the PMS Scale and the Menstrual Attitude Questionnaire [MAQ]. For statistical analyses, descriptive analyses, independent t test, One Way ANOVA analyses, Benforroni corrected analysis, Spearman correlation analysis and Cronbach's alpha coefficients were used. p values of less than 0.05 were considered statistically significant.

Results: The average age of the students was 19.89±1.43. PMS was detected in 52.3% of the students [n=263]. The most common physical PMS symptom was changes in appetite and the commonest psycho-behavioral symptom was depressive feelings. PMS was found significantly high in the students who were older, lived in rural regions and alone, did not engage in regular physical activity, consumed coffee daily, used salt frequently, had PMS history in family, and had cigarette and alcohol habits [$p<0.05$]. A negative, significant and linear correlation was determined between the total mean score of PMS and total mean score of MAQ [$r=-0.335$, $p<0.001$].

Conclusion: PMS is common in university students and PMS symptoms are associated with negative menstrual attidues. Therefore, it is crucial that health professionals are aware of the attitudes of students for menstruation and policy makers integrate the issues on reproductive health in the curriculum.

Keywords: Attitude; Menstruation; Premenstrual Syndrome; University Students

Introduction

Menstruation is a physiological event that starts in adolescence, continues until menopause and covers 35-40 years of a woman's life. Premenstrual syndrome [PMS) is used to describe physical, cognitive, affective, and behavioral symptoms that occur cyclically during the luteal phase of the menstrual cycle and resolve quickly at or within a few days of the onset of menstruation [1,2]. PMS is an important public health problem and most commonly seen in young women. According to a meta-analysis study which reviewed the world-wide prevalence of PMS; prevalence of PMS was 47.8%, 12% in France, 73% in Spain, 98% in Iran, and 21% in China [3]. The prevalence of PMS was between 5.9% and 91.8% in Turkey [4,5].

Known risk factors for PMS are hormonal imbalance, edema, stress, genetic factors, psychological factors, exercise habits, smoking, use of alcohol, and a diet rich in beef or caffeine-containing beverages [4,6]. Physical symptoms of this disorder include headaches, breast tenderness, abdominal bloating, peripheral edema and fatigue, changes in appetite and sleeping habits while psychological or behavioral disorders include social isolation, mood swings, irritability, anxiety, and depression [7]. These symptoms adversely affect general health, self-confidence, social relations and academic achievement of young women [8,9].

In order to reduce the premenstrual complaints, the modification of the dietary habits, weight control, gaining and maintaining exercise habits, stress management and smoking cessation may have positive influences on the problem [9,10]. Therefore, it is important that healthcare workers consult the students experiencing PMS on the methods to cope with PMS [11]. During this consultancy process, evaluation of beliefs and attitudes of the students regarding menstruation is also important. The conducted studies have illustrated that cultural, social, and environmental factors are effective on the beliefs and attitudes of students for menstruation [12-14]. These factors may lead to students to experience different experiences about PMS. The studies have concluded that negative attitude to menstruation increased PMS symptoms [12,14,15]. Because positive attitude to menstruation improve coping with PMS symptoms better and self-care strength. Only a limited number of studies are available in the literature in Turkey evaluating the relationship between menstruation attitudes and PMS symptoms [13,16,17]. It was concluded that the studies included only the nursing students. In this study, as different than the previous studies, an evaluation of the relationship between the menstruation attitude and experiencing PMS symptoms of female students attending various departments of the university was aimed. At the same time, PMS frequencies and the effective factors in the female university students were investigated in the study.

Methods

The cross-sectional study was carried out during December 1 to January 30, 2014 in a State University in Ankara, Turkey. The number of female students in the university where the research was carried out in 2013-2014 academic year was 842. In the study, reaching the whole population without using the sample selection methods was aimed. However, 339 students were not included in the study due to the reasons including not to comply with the research criteria (n=52), failure to precisely filling out the Survey Form and Scales (n=45), education mobility (n=24), failure to attend the class, and rejection to participate in the study (n=218). The study was completed with 503 female students who constituted 59% of the population. Students who had a menstrual period at least in the last two consecutive months were included the study. Students who were currently pregnant, used a hormonal method of contraception, history of amenorrhea, pelvic inflammatory disease or endometriosis, current depression, anxiety, and any other psychiatric disorders were excluded.

The study was conducted following receiving approval of the Ethics Review Committee of the university where the research was carried out. Prior to data collection, participants were informed about the purpose and duration of the study and that participation was voluntary. Informed consents were obtained and the subjects were informed that they could withdraw from the study at any time. The questionnaires were handed out to the students in classrooms and collected after they were completed. The questionnaires were completed within approximately 15-20 minutes.

Measurements

Data were collected using the Survey Form (SF); the PMS Scale, and the Menstrual Attitude Questionnaire (MAQ). The SF consisted of 20 questions with a number of demographics, life style and reproductive variables and the combined close and open responses that were gathered from various literatures by the investigators [8,16-19]. In the classification of some of the questions in the SF, some activities like walking, swimming or pilates performed a minimum of three times a week for at least 30 min were defined as "regular physical activities" [20]. Students who smoked at least one cigarette a day were defined as smokers, whereas non-smokers were defined as individuals who had never smoked or who had not smoked in the preceding six months. In

the present study, students who consumed on a daily basis three cups (150 ccx3) of coffee or more were considered as "consuming coffee". History of PMS in mother and/or sister was considered to have a positive family history of PMS [8].

The PMS Scale was developed and validated by Gencdogan based on the Diagnostic and Statistical Manual of Mental Disorders third edition (DSM III) and Diagnostic and Statistical Manual of Mental Disorders revised fourth edition (DSM IV-R). In Gencdogan's study, Cronbach's alpha coefficient was found to be 0.75 and 0.96. The scale assessed premenstrual symptoms and their severity [21]. Since its development, the PMS Scale has been used in many studies [4,18,19,21]. A 5 point Likert type scale comprised 44 questions with nine sub scales: depressive feeling; anxiety; fatigue; irritation; depressive thoughts; pain; appetitive changes; sleep changes; and bloating. The measurements on the scale were set according to the following scoring system: the response was scored "never" as "1", "rarely" as "2", "sometimes" as "3", "very often" as "4" and "always" as "5" points. In addition, the total score obtained from the sub scales established the "PMS Scale total score (min=44; max=220)". When the total gathered scores and subscale scores reached more than 50% of the highest score possible during the PMS Scale result-evaluation, this determined whether or not PMS was occurring. A score of 110 points or higher indicated the occurrence of PMS. Increases in the scores indicated an increase in PMS severity [21].

The MAQ was developed by Brooks-Gunn and Ruble to examine the relationship between the attitudes about menstruation and menstruation-related symptoms and other aspects of behavior in female adolescents [22]. Turkish reliability and validity study of the scale was conducted by Kulakac, *et al.* and Cronbach's alpha reliability coefficient was determined as 0.79 [23]. In the present study, Cronbach's alpha reliability coefficient was 0.74. The MAQ consisted of 31 items and five sub-dimensions: menstruation as a debilitating event; menstruation as a bothersome event; menstruation as a natural event; anticipation and prediction of the onset of menstruation; and denial of any effects of menstruation. The items were scored on a 5-point Likert scale, where high scores indicated strong endorsement of the items on each scale. A higher score taken in the scale indicated that the participant agreed with the following statements: menstruation was a debilitating event, menstruation was a bothersome event, menstruation was a natural event, the onset of menstruation could be anticipated and menstruation had no effect on the individual [23].

Statistical analyses

The data were analyzed using the SPSS version 16.0 (SPSS Inc., Chicago, IL). During the statistical analyses, descriptive analyses (percentage distribution, mean and standard deviation), and grouped variable comparison, independent t test, One Way ANOVA analyses, Benforroni corrected analysis and Spearman correlation analysis were employed. Reliability was assessed by using Cronbach's alpha coefficients. Values of p less than 0.05 were considered statistically significant.

Results

The average age of 503 students was 19.89±1.43. 37.7% of the students attended the faculty of health sciences, 11.1% the medical school, 11.1% the department of engineering, 11.8% the department of humanities and social sciences, 11.6% the business department, 9.7% the law school, and 7.1% the department of social sciences. The average weight of the students was 57.09 ± 8.78 and the average height was 164.68±5.82'dir. The average menarche age of the students was 13.20 ± 1.24. The duration between the two periods and duration of menstrual blood loss were 28.17±5.76 days and 5.91±1.46 days, respectively.

Table 1: The Premenstrual Syndrome [PMS) Scale and the average range of subscale scores [n=503)

Subscales	Mean	SD	Scales' min-max	Students' min-max	PMS score ≥110* n(%)
Depressive feelings	18.75	7.35	7-35	7-34	283(56.3)
Anxiety	13.78	6.35	7-35	7-35	124(24.7)
Fatigue	17.55	6.19	6-30	6-28	307(61.0)
Irritability	14.20	5.77	5-25	5-25	292(58.1)
Depressive thouhgts	15.53	6.94	7-35	7-32	170(33.8)
Pain	8.19	3.45	3-15	3-14	276(54.9)
Changes in appetite	9.50	3.40	3-15	3-15	353(70.2)
Changes in sleeping habits	7.72	3.29	3-15	3-15	248(49.3)
Bloating	8.88	3.71	3-15	3-15	312(62.0)
Total PMS scale score	113.92	36.15	44-220	44-218	263(52.3)

**PMS positive.*

The total mean score of the students in the PMS Scale was 113.92 ± 36.15 and when it was compared with the scale's total score average ($\overline{X}$ = 110, min = 44, max = 220), PMS frequency was determined as 52.3% (n=263). Subscale results were; 70.2% of the students experienced changes in appetite, 62.0% bloating, 61.0% fatigue, 58.1% irritability, 56.3% depressive feelings, 54.9% pain, 49.3% changes in sleeping habits, 33.8% depressive thouhgts, and 24.7% anxiety (Table 1).

The range of mean scores of PMS Scale of students according to some characteristics are shown in Table 2. In this study; the total mean score of PMS Scale was higher in the students who were 21 years of age and above than that of the students under 20 years of age; than that of the students who had PMS history in family; it was higher in the students who did not do regular physical activity than that of the students who did regular physical activity; it was higher in the students who consumed coffee everyday than that of the students who did not consume coffee; it was higher in the students who had salt-using habit than that of the students who did not have this habit; and it was higher in the students who had cigarette and alcohol habit than the students who did not have this habit [p<0.05]. Furthermore, based on Benforroni corrected analysis; total mean score of PMS scale was higher in the students who lived for a long time in rural regions than that of the students who lived in urban regions, and it was higher in the students who lived alone than that of the students living with their family (p<0.05).

In this study; a negative, significant and linear correlation was determined between the total mean score of PMS Scale and total mean score of MAQ (r=-0.335, p<0.001). This result indicates that; as the total mean score of PMS Scale increased, total mean score of MAQ decreased. In addition, negative and significant correlations were determined between the total mean score of PMS and mean scores of subscales "Menstruation as a debilitating event", "Menstruation as a bothersome event", "Anticipation and prediction of the onset of menstruation", "Denial of any effects of menstruation" of MAQ. In this study, negative and significant correlations were determined between the mean scores of subscales "Depressive feeling", "Anxiety", "Fatigue", "Irritability", "Depressive thought", "Pain", "Changes in appetite", "Changes in sleeping habits", "Bloating" of PMS Scale and total mean score of MAQ. Furthermore, positive and significant correlations were determined between the mean scores of subscales "Changes in sleeping habits, Bloating" of PMS Scale and the mean score of subscale "Menstruation as a natural event" of MAQ (Table 3).

Table 2: The range of mean scores of Premenstrual Syndrome [PMS) Scale of students according to some characteristics [n=503)

Characteristic	n	%	Mean±SD	Analyze**
Age				
<20 ≥ 21	384 119	76.3 23.7	110.80±35.14 123.98±37.68	t=3.511 **p<0.001***
Living area				
Rural District Center of province	34 100 369	6.8 19.9 73.4	117.23±47.68 107.10±34.34 115.47±35.30	F=1.37 **p=0.010***
Individual living status				
With family With friends Alone	206 276 21	41 54.9 4.2	110.41±34.71 115.88±36.20 122.61±46.78	F=1.33 **p=0.017***
History of PMS in the first degree relatives				
Yes No	233 270	46.3 53.7	123.42±37.18 105.72±33.19	**t=5.641**** **p<0.001***
Regular physical activity				
Yes No	135 368	26.8 73.2	110.16±36.85 115.30±35.85	**t=1.415**** **p=0.158**
Daily coffee intake				
Yes No	152 351	30.2 69.8	123.51±37.76 109.77±34.68	**t=3.970**** **p<0.001***
Frequent salt intake habit				
Yes No	132 371	26.2 73.8	125.71±39.42 109.73±34.00	**t=4.441**** **p<0.001***
Smoking				
Yes No	38 465	7.6 92.4	139.07±45.11 111.87±34.58	**t=4.546**** **p<0.001***

Characteristic	n	%	Mean±SD	Analyze**
Alcohol use				
Yes	41	8.2	129.78±46.26	**t=2.952****
No	462	91.8	112.51±34.83	**p=0.003***

p-value<0.05; **t test, * One way Anova*

Table 3: Results of the Spearman correlation analysis between Premenstrual Syndrome [PMS) and the Menstrual Attitude Questionnaire [MAQ) [n=503)

		Total and Subscale scores of PMS									
MAQ subscale		Depressive feeling	Anxiety	Fatigue	Irritability	Depressive thought	Pain	Changes in appetite	Changes in sleeping habits	Bloating	**Total**
Menstruation as a debilitating event	r	-0,177[a]	-0,079	-0,280[a]	-0,137[a]	-0,122[a]	-0,137[a]	-0,178[a]	-0,082	-0,163[a]	-0,204[a]
Menstruation as a bothersome event	r	-0,109[b]	0,009	-0,081	-0,120[a]	-0,059	-0,120[a]	-0,099[a]	0,008	-0,050	-0,092[b]
Menstruation as a natural event	r	0,011	0,031	0,047	0,031	-0,014	0,031	0,042	0,110[b]	0,115[a]	0,051
Anticipation and prediction of the onset of menstruation	r	-0,427[b]	-0,263[a]	-0,361[a]	-0,511[a]	-0,343[a]	-0,511[a]	-0,342[a]	-0,298[a]	-0,470[a]	-0,479[a]
Denial of any effects of menstruation	r	-0,146[a]	-0,072	-0,105[b]	-0,194[a]	-0,090[b]	-0,194[a]	-0,100[b]	-0,040	-0,101[b]	-0,139[a]
MAQ total	r	-0,338[a]	-0,139[a]	-0,313[a]	-0,350[a]	-0,236[a]	-0,263[a]	-0,150[a]	-0,285[a]	-0,268[a]	-0,335[a]

a. Correlation is significant at the 0.01 level
b. Correlation is significant at the 0.05 level

Discussion

In this study, the relationship between the menstruation attitudes of the female university students and PMS was evaluated, and PMS prevalence was detected as 52.3%. The prevalence of PMS was reported to be between 36.4% and 90% in the studies conducted on young females in Turkey [4,16,18,19,21,24]. PMS prevalence was reported as 31% in the America [25], it was 35.6% in Saudi Arabia [26], 73.7% in Spain [27], and 79% in Japan [28]. PMS prevalence varies in the studies. This variation could be due to the non-standard scales used in the researches. At the same time, it can be explained by the different ages of the participants in the research groups, their marital status, occupation, educational statuse, and race.

The results of this study indicated that the most frequent PMS symptoms were respectively change in appetite (70.2%), abdominal bloting (62%), fatigue (61%) ve depressive feelings (56.3%). When the studies in the universities in different regions of Turkey were examined, the most frequent PMS symptoms stated in Guvenc *et al.* [16] study were respectively changes in appetite, depresif feelings, pain, fatigue; in Asci, *et al.* [17] study, they were respectively appetite, abdominal bloating, fatigue and depresif feeling; in Goker, *et al.* [5] study, they were abdominal bloating and irritability. When the studies conducted in different populations were examined, the most frequent symptoms in Pakistani female student were fatigue, irritability, breast tenderness, and changes in appetite [29]. Balaha *et al.* [26] reported that the most frequent PMS symptoms female medical student in Saudi Arabia were abdominal bloating, breast tenderness, psychosocial confusion, and irritability. The most frequent symptoms in Ethiopian female student were reported to be the changes in appetite, abdominal bloating and fatigue, irritability, and depressive feelings [30]. In another study, the most frequent symptoms in Nigerian female student were reported as breast tenderness, sleeplessness, loss of interest to daily activities, and changes in appetite [31]. The study results have concluded that PMS symptoms experienced by university students are similar despite of the social differences. This similarity can be explained by the students being in the same age period.

In this study, an increase in PMS symptom severity was determined in the students who were older, lived in rural regions and had PMS history in family [p<0.05]. The studies have shown that, PMS had a significant trend for older age, rural residence and positive family history of PMS [8,9,18,26]. At the same time, this study showed that severity of PMS symptoms increased in the students who consumed alcohol, smoked cigarettes and used salt frequently. Studies have found that the women who consume more alcohol and salt are inclined to PMS [18,32]. Smoking has an effect on increasing PMS since it influences estrogen, progesterone, androgenous and gonadotrophin levels. For this reason, it is recommended to restrict smoking in order to reduce the PMS symptoms [33]. In the present study, the frequency of PMS increased as the smoking increased as similar to the literature [8,25,33]. Recent studies have shown that there is a relation between coffee consumption and PMS, as caffeine is a stimulant and increases stress, irritability and emotionality [8,18,34,35]. Studies have shown that physical activity and social support is

crucial to reduce the complaints of PMS [36,37]. In this study, mean score of PMS scale was found higher in the students who lived alone than that of the ones living with their family, and it was higher in the students who did not do regular physical activity than that of the ones who did regular physical activity. This fact illustrates the significance of regular physical activity and social support for coping with PMS.

The menstruation attitudes of the students were evaluated by MAQ in the present study. A negative, significant and linear correlation was determined between the total mean score of PMS and total mean score of MAQ ($r = -0.335$, $p<0.001$). As similar to this study, the studies conducted on the university students in various societies have shown that negative menstruation attitude increases the severity of PMS symptoms [14-17]. In addition, negative and significant correlations were determined between the total mean score of PMS Scale and mean scores of subscales "Menstruation as a debilitating event", "Menstruation as a bothersome event", "Anticipation and prediction of the onset of menstruation", "Denial of any effects of menstruation" of MAQ in the present study. In paralel with this study, Guvenc, *et al.* [16] and Song, *et al.* [15] determined that severity of PMS symptoms increased in the nursing students who regarded menstruation as a debilitating event. Aşçı, *et al.* [17] concluded that severity of PMS symptoms increased in the nursing students who accepted menstruation as a debilitating event and anticipated and predicted the onset of menstruation. In the present study, as different than other research results, severity of PMS symptoms increased in the students who regarded menstruation as a bothersome event and denied any effects of menstruation. This difference could be due to the variation in the departments where the students attended in the scope of this study because it is considered that the students who did not receive education in health field tended to deny the menstruation effects due to the lack of knowledge.

In this study, there is no significant correlation between the total mean score of PMS Scale and mean score of subcales "Menstruation as a natural event". However, positive and significant correlations were determined between the mean scores of subscales "Changes in sleeping habits", "Bloating" of PMS Scale and mean score of subscale "Menstruation as a natural event" of MAQ. This finding shows that severity of PMS symptoms namely "changes in sleeping habits" and "bloating" in the students who accept menstruation as a natural event. In studies conducted similary, the university students who regarded menstruation as a natural event were determined to experience PMS symptoms less frequently [15-17] because the young women who accept menstruation as a natural phenomenon can accept this process as a well-being for reproduction health [38]. However, these issues are regarded as a taboo due to the traditional structure of Turkey and young women cannot talk about these issues with their parents. At the same time, inadequate inclusion of the reproduction health issues in the curriculum in Turkey can cause to be caught to menstruation unprepared. This situation prepares the ground for menstruation to turn into a crisis for young women and makes it difficult to cope with it [39]. Hence, it is considered that parent education and integration of reproduction health issues in the curriculum is important for developing positive attitude for this term.

This study also has two limitations. The first limitation is that only 59% of the sampling group was reached due to data loss in the study. Thus, this study was limited to female students who do not represent the whole population in Turkey. The second limitation is that the data of this study were based on self-reports of the students instead of prospetive reports or clinical measurements.

Conclusion

PMS is common in university students and PMS symptoms are associated with negative menstrual attidues. Therefore, it is crucial that health professionals are aware of the attitudes of students for menstruation and policy makers integrate the issues on reproductive health in the curriculum.

Acknowledgment

I would like to thank to students who supported us during the data collection.

Synopsis: This study estimated the frequency of Premenstrual Syndrome [PMS) in Turkish university students and the effects of menstrual attitudes on PMS symptoms. PMS is common [52.3%) in university students and PMS symptoms are associated with negative menstrual attidues [$r=-0.335$, $p<0.001$].

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