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Premenstrual Syndrome Levels and Eating Attitudes Among University Students

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Abstract

Background: Premenstrual syndrome (PMS) is the combination of physical, behavioral, and psychological symptoms that characterize the week leading up to menstruation, and it can last for a few days. This study aimed to investigate irregular PMS, eating attitude behavior, and body mass index values among university students.

Methods: The study sample consisted of 140 Artvin Çoruh University students studying Nutrition and Dietetics. The study includes questions from three separate sections. The first section contains a sociodemographic characteristic form, the second section consists of the Premenstrual Syndrome Scale (PMSS), and the third section includes the 26-item Eating Attitude Test (EAT-26).

Results: In this study, the mean total score for PMSS was 135 ± 38.3 , and the mean total score for EAT-26 was 17.0 ± 10.8 . Individuals with irregular sleep patterns experienced more severe PMS ($p < 0.01$) and a shorter daily sleep duration ($p < 0.05$).

Conclusions: High percentages of nutrition and dietetics students in our study experienced PMS, and the incidence of eating disorders was low. The relationship between PMS and EAT-26 must be understood for the health and well-being of university students.

Keywords: attitude, premenstrual syndrome, students

INTRODUCTION

Premenstrual syndrome (PMS) is a condition characterized by distressing physical, behavioral, and psychological symptoms that indicate the week leading up to menstruation, and it can last for a few days. The intensity of PMS among women can vary due to hormonal, psychosocial, and physiological factors.¹ Women with PMS experience emotional or somatic symptoms that can cause considerable impairment in social or occupational malfunctioning. The onset of PMS symptoms occurs at any age after menarche, and their severity tends to intensify with age; however, these symptoms decrease as menopause approaches.² PMS symptoms include feelings of tension, depressive mood, decreased concentration, headache, changes in appetite (increased or decreased), cravings for sweet, salty, or spicy foods, alterations in study habits, excessive sleep or insomnia, and clumsiness. During the premenstrual period, these symptoms can adversely affect university students' daily activities, class attendance, academic performance, emotional well-being, and family relationships.³ The prevalence of PMS within society and its influencing factors must be determined to describe its etiology and to enable planning efforts for its treatment.⁴ Despite the existing research on PMS in women, the

studies conducted on young adults are limited. The prevalence of PMS ranges between 36.3%–91.8%, according to the related research conducted on students in Turkey.^{5,6}

Eating disorders refer to psychiatric illnesses characterized by abnormal eating habits. Complications, such as nutritional, psychiatric, and physical health disorders, accompany these conditions. Eating disorders may include nonclinical eating disorders, such as being excessively fat or excessively dieting, and clinically severe forms, such as anorexia nervosa and bulimia nervosa. Eating disorders are more prevalent in individuals under the age of 25 and predominantly affect women.⁷ The risk factors for developing eating disorders include biological, psychological, and environmental factors. Most risk factors of disordered eating and eating disorders are specific to college environments. The increased growth and development rate during adolescence increases an individual's need for nutrients and energy. Adequate and balanced nutrition is crucial during this period. Moreover, during this phase, hormonal fluctuations in the menstrual cycle can negatively affect a female's appetite control and eating behavior.⁸

Adolescents transitioning from high school to college are exposed to various novel environmental factors that affect them differently. Most of these factors contribute to developing and exacerbating disordered eating behaviors. Given the competitive college education environment and the pursuit of excellence among peers,

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the demand for adaptation to new environments increases.^{9,10} Özkan *et al.* identified a positive correlation between PMS and eating attitudes in adolescents.¹¹ They observed that 23.1% of adolescents experiencing PMS showed eating attitude disorders.

Since a considerable proportion of lean body tissue is composed of water, changes in body water during the menstrual period can affect women's body composition. Many women report experiencing temporary weight gain during their premenstrual phase, often attributed to water retention and bloating. This condition can cause a minor increase in the body mass index (BMI) during such period, but it is typically temporary and reverses once menstruation begins.¹²

PMS itself is unlikely to have a substantial long-term effect on the BMI. However, if the changes in eating behaviors associated with PMS lead to consistent overeating or unhealthy dietary choices over time,¹ they can contribute to weight gain and potentially affect BMI in the long run. An increased appetite, particularly for carbohydrate-rich and sweet foods, has been observed in some individuals with PMS. Such eating behavior is often attributed to hormonal fluctuations during the menstrual cycle, which can lead to cravings.¹³ This study aimed to investigate irregular PMS, eating attitude behavior, and BMI values among university students.

METHODS

Research sample

The study sample comprised voluntary students enrolled in the Nutrition and Dietetics Department of Artvin Coruh University Faculty of Health Sciences during the academic year 2021–2022. This research was approved by the Artvin Coruh University Ethics Committee (04.01.2022-34728) and included 140 students. The data for descriptive research was collected through an online survey form created on Google Forms using the snowball sampling method. The inclusion criteria for the study group were as follows: a regular menstrual cycle, no history of psychiatric illness nor severe trauma in childhood, no diabetes and renal or hepatic diseases, no special diet, no form of any hormone therapy received in the last two months, and not using antidepressants.

Data collection

This research aimed to determine the levels of PMS, eating attitude behavior, and anthropometric characteristics among university students and involved the administration of three sections of questions. The first section included questions regarding the students' age, sleep patterns, exercise status, and anthropometric characteristics; the second the Premenstrual Syndrome Scale (PMSS); and the third the 26-item Eating Attitude Test (EAT-26). The participants' BMI values were calculated using the kg/m^2 formula based on their weight and height measurements.

Premenstrual syndrome scale

The PMSS was developed by Gençdoğan, and its validity and reliability were tested in this work.¹⁴ The calculated Cronbach's alpha coefficient of the scale was 0.75. PMSS is a 44-item five-point Likert-type scale and consists of nine subdimensions (depressive mood, anxiety, fatigue, irritability, depressive thoughts, pain, changes in appetite, changes in sleep, and bloating). In the scoring of the scale, "never" (1 point), "very little" (2 points), "sometimes" (3 points), "often" (4 points), and "always" (5 points) are evaluated. The lowest score on the scale is 44, and the highest is 220. A score of 50 or higher indicates that the individual is experiencing PMS.

Eating attitude test-26

The Eating Attitude Test-26 (EAT-26) is used to assess the risk of eating disorders. EAT-26 test is a short version of the 40-item EAT developed by Garner *et al.*¹⁵ The total score in EAT-26 is calculated by scoring the answers to the first 25 questions as "always" (3 points), "usually" (2 points), "often" (1 point), "sometimes," "rarely," and "never" are scored 0.⁸ The scoring for the 26th question is different, with "never" (3 points), "rarely" (2 points), "sometimes" (1 point), and "often," "usually," and "always" being scored 0. In this study, the scale total score was determined using these values. Individuals who scored 20 or more points on the test were considered to have an eating disorder. The calculated Cronbach's alpha coefficient of the scale was 0.84.

Statistical analysis

Statistical analyses were conducted using the SPSS Statistics 26 package program (SPSS Inc., Chicago, Illinois, ABD). After normality analyses, the independent sample T-test was used to evaluate differences between groups. Correlation analysis was performed using Pearson correlation on the data that showed a normal distribution. A *p*-value of < 0.05 was considered statistically significant in data evaluation.

RESULTS

The mean, standard deviation, and range of PMSS and EAT-26 were 134.69 ± 38.30 (55–211) and 16.57 ± 9.94 (2–49) respectively. Cronbach's alpha reliability coefficients were examined for the reliability levels of the measurement tools. The Cronbach's alpha reliability coefficients were 0.97 for PMSS and 0.85 for EAT-26. These reliability coefficients show that Cronbach's alpha has sufficient reliability in both scales.

As shown in Table 1, 85% of the participants do not smoke, and 90% do not use alcohol. Approximately 45.7% of the students have dieted before, and about 50.7% have used dietary supplements. Around 32.9% of the students engage in sports. However, 33.6% suffer from an eating disorder. According to the scale results, participants with an EAT-26 score of 20 or higher exhibit an eating disorder.

TABLE 1. Frequency analysis of other characteristics of the participants (N = 140)

Participants' characteristics	N	%
Previously going on a diet		
Yes	64	45.7
No	76	54.3
Engaging in exercise		
Yes	46	32.9
No	94	67.1
Using dietary supplements		
Yes	71	50.7
No	69	49.3
Sleep schedule		
Regular	49	35.0
Irregular	91	65.0
Smoking		
Yes	21	15.0
No	119	85.0
Using alcohol		
Yes	14	10.0
No	126	90.0
Menstrual cycle regularity		
Regular	113	80.7
Irregular	27	19.3
Seeking medical attention for menstrual pain		
Yes	34	24.3
No	106	75.7
Eating attitude		
Yes	47	33.6
No	93	66.4
PMSS		
Yes	140	100.0
No	0	0.0

TABLE 2. Values for age, BMI, sleep duration, and age at first menstruation

Variables	Mean $\pm$ SD	Min – Max
Age	21.6 $\pm$ 1.3	19 – 24
Height	163.7 $\pm$ 5.3	153 – 176
Weight	57.2 $\pm$ 7.5	43 – 78
BMI	21.4 $\pm$ 2.7	16.5 – 28.6
Daily sleep hours	7.7 $\pm$ 0.9	6 – 9
Age of first menstruation	13.6 $\pm$ 1.2	12 – 17

TABLE 3. Pearson correlation results for BMI, age, age at first menstruation, and PMSS values in individuals with eating disorders (EAT-26)

	BMI	Age	Age of first menstruation	PMSS score
BMI	1	–0.065	–0.224	0.150
Age		1	0.119	0.162
Age of first menstruation			1	–0.467*
PMSS score				1

* $p < 0.005$ (Pearson's correlation analysis)

Approximately 19.3% of the students reported having irregular menstruation, and around 24% had consulted a doctor for menstrual pain. A score of "50" or higher on the PMSS indicates that an individual experiences PMS. Most importantly, in our study, all participants reported having experienced PMS. Therefore, our sample consisted entirely of individuals experiencing PMS.

The students included in this study had an average age of 21.6 ± 1.3 years, average BMI of 21.4 ± 2.7 , average daily sleep duration of 7.7 ± 0.9 hours, and average age at menarche equal to 13.6 ± 1.2 years (Table 2).

In individuals with eating disorders, according to the EAT-26 scale, as age and age at first menstruation decreased, the BMI increased (Table 3). However, this result was not statistically significant ($p > 0.05$). This finding can be attributed to the small sample size used in this research. Regardless, this outcome shows that the early onset of menstrual bleeding affected the BMI of our sample of individuals with PMS. Correlation analysis revealed a significant negative correlation ($p < 0.001$) between the level of experiencing PMS and the age of first menstrual bleeding. Among our participants with eating disorders, more severe PMS symptoms were recorded for women who experienced their first menstrual bleeding at an earlier age.

As shown in Table 4, the BMI of participants who had experienced PMS and had previously gone on a diet was significantly higher than those who had never dieted before ($p < 0.001$). We compared the responses of the participants who experienced PMS to our question about sleep patterns, including the daily sleep durations and PMS levels. Individuals with irregular sleep patterns experienced more severe PMS ($p < 0.01$) and reported a shorter daily sleep duration ($p < 0.05$).

TABLE 4. Comparison of BMI, PMSS, and daily sleep time of different groups

	Mean $\pm$ SD	<i>p</i>
Previously going on a diet	BMI	
Yes	22.8 $\pm$ 2.7	0.000*
No	20.2 $\pm$ 2.1	
Sleep schedule	Daily sleep duration	
Regular	7.9 $\pm$ 0.7	0.029*
Irregular	7.5 $\pm$ 1.0	
Sleep schedule	PMSS	
Regular	123 $\pm$ 41	0.009*
Irregular	141 $\pm$ 36	

*Independent sample t-test

DISCUSSION

University years define the transitional period between the late stages of adolescence and the beginning of early adulthood. During this period, young people, who are normally accustomed to their family environment, experience increased stress levels caused by changes in their nutrition and housing habits.¹⁶ PMS, although commonly occurring during adolescence, is one of the major problems encountered during this period. PMS negatively affects women's family, work, and social relationships, leading to loss in education and workforce, decreased job performance, increased error/accident rates, alcohol/substance use, and a tendency to commit crime; it can also cause mothers to behave negatively toward their children.^{17,18}

In our study, the prevalence of PMS was 100%, and the PMSS score was 135 $\pm$ 38.3. Tanriverdi *et al.* examined the frequency of PMS among university students and observed a PMS prevalence of 67.5%.⁶ Pinar *et al.* reported that 72.1% of the students they studied experienced PMS.¹⁹ Erbil *et al.* determined a PMS prevalence of 49.7% among university students.²⁰ Another study on 254 women aged 18–45 who were studying or working at university revealed an 80.2% prevalence in PMS.²¹ Most importantly, our study revealed that all participants experienced PMS. When we compared our findings with the frequency of PMS in studies conducted among students in our country, the most remarkable finding is that all participants experienced PMS.

Sleep is one of the fundamental human needs, and it plays an important role in achieving a healthy life. Insufficient sleep poses a threat to health and leads to a decrease in cognitive, psychomotor, and emotional functions. In our study, the mean daily sleep duration of the participating students was 7.7 $\pm$ 0.9 hours. Students with irregular sleep patterns experience more severe PMS and a shorter daily sleep duration compared with other participants.²²

Other factors that may affect the presence of PMS include smoking, alcohol consumption, and exercise.^{23,24} A

previous study reported that smoking, especially during adolescence and young adulthood, increases the risk of PMS development, and the incidence of PMS is higher in those who start smoking during adolescence.²⁵ Another study observed that smoking was more common in those with PMS and that the severity of PMS increased as the amount of smoking increased.²⁶

In our study, the percentage of PMS was 100% among smokers, drinkers, nonsmokers, and nondrinkers. Smoking and alcohol consumption were not determinative factors of PMS. A previous study observed that the BMI was higher in individuals with PMS than those without.²⁷ Another study revealed that bloating and premenstrual food cravings were more common in individuals with a BMI > 25 kg/m².²³ In our study, the BMI of participants who experienced PMS and had previously dieted was statistically significantly higher than those who had never dieted before.

Educated individuals or those who work in the health field are susceptible to eating because of their excessive interest in healthy eating.^{28,29} A conducted on university students indicated that students enrolled in the nutrition and dietetics department had more dietary restrictions than others. However, no difference was observed between the two groups regarding eating disorder diagnosis. Compared with other students, students from the nutrition and dietetics department exhibited decreased orthorexia tendencies.³⁰ They engaged in healthier eating behaviors in their final year, as opposed to their first year.³⁰ In our study, 33.6% of individuals have eating disorders, with an average total score of 17.0 $\pm$ 10.8 on the EAT-26. EAT-26 scores of 20 or higher indicate the presence of an eating disorder. In our study results, a high percentage of the participants did not exhibit eating disorders. Moreover, 100% of the investigated nutrition and dietetics students experienced PMS, but the incidence of eating disorders among them was low.

Our study had a limited sample size. The generalizability of results could have been increased by using a more prominent and representative sample. Our study was not designed to establish a cause-and-effect relationship between PMS and EAT-26. More controlled experiments may be required in this regard. Despite these limitations, this study sheds light on the potential relationship between PMS and EAT-26. Future researchers can use larger sample sizes and different methodologies to investigate this topic further.

CONCLUSIONS

Factors such as university life, academic pressures, social stress, lifestyle changes, and hormonal fluctuations can exacerbate PMS symptoms. These symptoms typically manifest as mood swings, painful physical symptoms, and changes in eating behaviors. Particularly, alterations in

eating behaviors during the menstruation period make PMS an important concern for college students. Research tools such as EAT-26 are utilized to assess the relationship between PMS and eating behaviors, and understanding this connection holds importance for the health and well-being of college students. Therefore, comprehending the effect of PMS on university students and developing appropriate interventions are crucial research and clinical focus for young adults' health and quality of life.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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