Prevalence of premenstrual syndrome and its relationship to depressive symptoms in first-year university students

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ABSTRACT

الأهداف : تحديد انتشار والعوامل التي تؤثر على متلازمة ما قبل الحيض (PMS) في طالبات السنة الأولى في الحرم الجامعي وتقييم العلاقة بين الاكتئاب و PMS .

الطريقة : وقد أجريت هذه الدراسة المقطعية على 618 طالبة جامعي من مارس إلى يونيو 2016 في جامعة دوكوز إيلول، إزمير، تركيا . تم جمع البيانات باستخدام مقياس متلازمة ما قبل الحيض (PMS)، ومقياس بيك الاكتئاب ونموذج تعريف الطالبة . تم تحليل البيانات مع النسخة 20.0 من الحزمة الإحصائية للعلوم الاجتماعية . تم استخدام الإحصاء الوصفي، واختبار بيرسون واختبار مربع مربع للاتجاه، واختبار تي للعينات المستقلة وتحليل الانحدار اللوجستي .

النتائج : في الدراسة ، كان معدل انتشار PMS في طالبات الجامعة 58.1% . وكانت متلازمة ما قبل الحيض أعلى بكثير في الطالبات المدخنات ، ويشربون الكحول ، ويستهلكون كمية كبيرة من الأطعمة الدهنية والسعرات الحرارية العالية ، في الطالبات الذين لديهم نظرة إلى تدني وضعهم الاقتصادي بشكل سيء للغاية ، ومن لديهم أي مرض مزمن أو فقر الدم (0.05>p) . وكانت متلازمة ما قبل الحيض أعلى بكثير في الطالبات الذين لديهم خطر الاكتئاب (0.01>p) . تم تحديد علاقة ذات دلالة إحصائية بين خطر الاكتئاب والدرجات الكلية PMSS وجميع الدرجات الفرعية باستثناء التغيرات في الشهية (0.01>p) .

الخاتمة : تم العثور على متلازمة ما قبل الحيض في أكثر من نصف الطالبات الذين شاركوا في الدراسة . كانت متلازمة ما قبل الدورة الشهرية أعلى لدى الطالبات الذين يعانون من مرض مزمن و/أو نمط حياة غير صحي . كانت هناك علاقة ذات دلالة إحصائية بين PMS ومخاطر الاكتئاب . يجب تقييم الطالبات الذين لديهم أعراض PMS لخطر الاكتئاب .

Objectives: To determine the prevalence of and factors influencing premenstrual syndrome (PMS) in first-year students at a university health campus and to evaluate the relationship between depression and PMS.

Methods: This cross-sectional study was conducted on a population of 618 university students from March to June 2016 at Dokuz Eylül University, Izmir, Turkey. Data were collected using the Premenstrual Syndrome Scale (PMSS), Beck Depression Inventory and Student Identification Form. The data were analyzed with Version 20.0 of the Statistical Package for the Social Science. Descriptive statistics, Pearson's chi-square test, and Chi-square test for trend, and independent samples t test and logistic regression analysis were used.

Results: The prevalence of PMS in the university students was 58.1%. Premenstrual syndrome was significantly higher in students who smoked, drink alcohol, and consumed a large amount of fatty and high-calorie foods, in students who had a bad to very bad perception of their economic situation, and those who had any chronic disease or anemia ($p<0.05$). Premenstrual syndrome was significantly higher in students who had a risk of depression ($p<0.01$). A statistically significant relationship was determined between the risk of depression and PMSS total score and all PMSS subscale scores except for appetite changes ($p<0.01$).

Conclusion: Premenstrual syndrome was found in more than half of the students who participated in the study. Premenstrual syndrome was higher in students who had a chronic disease and/or an unhealthy lifestyle. There was a statistically significant relationship between PMS and risk of depression. Students who have PMS symptoms should be evaluated for the risk of depression.

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Certain psychological and physical changes are seen in most women during the period of fertility. Premenstrual syndrome (PMS) is described as a cyclical process which starts in the luteal phase and ends approximately 4 days after menstruation and which manifests itself in physical, cognitive, emotional and behavioral changes.[1-3] Most of these symptoms disappear by themselves with the beginning of menstruation.[3] It has been noted that PMS is seen in 75% of women who menstruate and it occurs at a higher rate in young women.[4] Symptoms of PMS can begin at any age after menarche depending on individual differences and they are commonly seen between puberty and the twenties.[1,5] The most frequent physical symptoms in PMS are breast tenderness, cravings for certain foods, increase in appetite, pain, fatigue, water retention in some parts of the body, and acne. The most frequent emotional and behavioral symptoms are irritability, discomfort, petulance, pessimism, depression, fatigue, a decrease in attention span, forgetfulness, and indecision.[1,2,5,6] Although the reasons for PMS are unknown, it has been noted that the presence of certain psychiatric and chronic diseases, and hormonal, familial and environmental factors affect the frequency and severity of PMS.[2,5,7] It is important to determine the prevalence of PMS within society and the factors influencing it in order to describe the etiology of PMS and to plan efforts for its treatment.[1,3] Standard scales prepared to determine PMS can be used. The prevalence of PMS ranges between 36.3-91.8% in related research conducted on the students in Turkey.[8-17] The prevalence of PMS was found to be between 32.7-99.5% in research conducted in different countries.[18-24] It has been noted that various psychosocial factors also influence PMS. Stress, the experience of depression during the menstrual cycle, and cultural beliefs and the differences in individual methods for overcoming symptoms are among these psychosocial factors.[2,3,7] Symptoms such as depression and anxiety in an individual can trigger PMS.[1-3] The correlation between PMS and the risk of depression has been analyzed in some of these research studies.[10,20,22] That female students who have reached puberty have been aware of PMS from an early age is important in their use of suitable treatments and methods of relaxation.

The purpose of this study was to determine the prevalence of and the factors affecting PMS in first-year students studying at a health campus and to evaluate the relationship between PMS and symptoms of depression.

Methods. *Search strategy.* To find prior, related research, PubMed and Google Scholar were searched using the following keywords: premenstrual syndrome; depression risk; university student; menstruation; depressive symptoms.

Subjects. This cross-sectional research consisted of first-year female students studying related subjects in different parts such as Faculty of Medicine (FM); Faculty of Nursing (FN); School of Physical Therapy and Rehabilitation (SPTR), and Vocational School of Healthcare (VSH) of the Dokuz Eylül University (DEU) health campus. There was a total of 730 first-year female students in the schools/faculties indicated in the 2015-2016 academic year when the research was conducted. The study followed the principles of the Helsinki Declaration and institutional approval was obtained from the Non-invasive Clinical Research Ethics Committee of Dokuz Eylül University, Izmir, Turkey. Participants were informed of their rights before signing the informed consent form, including the right to withdraw from the study at any time.

Study sample. It was intended to reach the whole research universe without selecting a sample in this research. Written permission was received from the principals of the schools/faculties where the students participating in the research were studying and lists of first-year students were provided. A total of 618 students participated in the research. No students refused to participate in the research. The 112 students who did not participate in the research were students with attendance problems at the university.

Data collection. The data collection stage of the research took place from March to June 2016. The questionnaires were completed by the participating students. The questionnaires were distributed before the theoretical lesson and after the written voluntary consent of the students participating had been received, and the students completed the questionnaires under the supervision of the researchers. The attempt was made to reach students who were not present during the first data collection stage before the theoretical lesson at their schools twice over a ten-day period.

Inclusion and exclusion criteria. First year female students of health professions who were 18 years of age or older were included in this study. Those under 18 years of age and those who refused to fill out the questionnaire form were excluded from this study.

Student identification form. This questionnaire, which consisted of 22 questions, was a form in which the students' sociodemographic and individual characteristics, characteristics of their menstrual

periods and symptoms and information about their specific nutritional habits (consumption of salt, coffee, chocolate, high fat, and high-calorie food) were recorded. The students' heights and weights were not measured, they were recorded according to their own statements. Weight was divided by the square of the height (kg/m²) to calculate the body mass index (BMI). Body mass index was classified according to the World Health Organization (<18.50 kg/m²: underweight; 18.50-24.99 kg/m²: normal weight; 25.00-29.99 kg/m²: overweight; ≥30.00 kg/m²: obese).

Premenstrual syndrome scale (PMSS). The scale developed by Gençdoğan was to measure premenstrual symptoms, and validity and reliability analyses were performed. The Cronbach's alpha coefficent of the scale was found to be 0.75. The PMSS is a Likert scale which consists of 44 items with 5 choices ('Never', 'Rarely', 'Occasionally', 'Frequently', 'Very Frequently'). The "PMSS total score" consists of 9 subscales: depressive affect, anxiety, fatigue, irritability, depressive thoughts, pain, appetite changes, sleep changes and abdominal bloating; and the total of the scores of these 9 subscales were obtained. The lowest score obtainable from the scale was 44 and the highest score was 220. A high score on the scale indicates that the intensity of the PMS symptoms is high. When the PMSS results are evaluated, they can be evaluated as "There is PMS" or "There is no PMS" according to whether or not the score is higher than 50% of the highest score obtainable from the total score and the subscale scores.[25] The PMSS is one of the scales used in determining the prevalence of PMS in adolescents.[3,25] This scale has been used on different groups in the fertile period[26,27] besides its use on high school[18,19] and university students.[8-14,16]

Beck depression inventory (BDI). The purpose of this scale, which is used frequently in psychiatric research, is not to diagnose, but to evaluate the level of depressive symptoms in numerical terms.[28] The person is asked to note the "sentence which best describes how she feels today and has felt in the last week" on a scale with 21 items which asks about symptoms of depression. There are 4 choices for each item and a score of 0-3 is given. The lowest score obtainable from the scale is 0 and the highest score is 63. Scores over 17 on the BDI indicate that the risk of depression is high in the individual. The scale's validity and reliability test was performed in Turkey with regard to its emotional aspects, and it was found that it could be used for measuring symptoms of depression in university students.[29]

Statistical analysis. Statistical analysis was conducted using the Statistical Package of the Social Science for Windows 20.0 (IBM Corp., Armonk, NY, USA) statistics package software. The students' sociodemographic characteristics were calculated as numbers and percentages. Average and standard deviation of the continuous variables and their minimum and maximum values were calculated. Premenstrual syndrome was considered to exist in students whose PMSS total score was ≥111. Pearson's Chi square test and Chi-square test for trend were used as methods of statistical analysis in evaluating PMS according to the students' sociodemographic characteristics, individual characteristics, habits, health situation, reproductive health characteristics, and risk of depression. The t test was used in the independent groups in the comparison of PMSS subscales according to depression risk. The students' sociodemographic and individual characteristics and the impact of the depression risk on the presence of PMS were analyzed with the logistic regression analysis method. A *p*-value<0.05 was considered significant.

Results. A total of 618 students participated in the research and the percentage of the sample participating was 84.6%. The sociodemographic characteristics of the students are presented in **Table 1**. The average age of the students was 19.5±1.3 (min: 17, max: 31). It was determined that there was a PMS in 58.1% (n=359) of the students. The total average score of the students was 118.1±35.2 (min: 44, max: 220). Although it was not statistically significant when it was compared according to the different schools/faculties, PMS was highest in SPTR students (70.4%) (*p*>0.05). No significant correlation was determined between the students' age, school, parents' education level, parents' living together and the place the student resided during her university education and the existence of PMS (*p*>0.05). Premenstrual syndrome was significantly higher in the students whose economic status was perceived to be bad and very bad (*p*<0.05) (**Table 1**). It was determined that PMS was significantly higher in students who smoked, drank alcohol and who had any chronic illness or anemia (*p*<0.05) (**Table 2**).

Premenstrual syndrome was observed in 67.8% of the students who had female reproductive organ illnesses, in 60.6% of the students who did not menstruate regularly, and in 60.1% of the students who had longer periods (≥6 days). However, no significant correlation could be determined between the students' reproductive health history and existence of PMS (*p*>0.05). Premenstrual syndrome was determined in 70.6% of the students consulted doctors for medical help due to PMS problem, 76.9% of the students who were absent from the school due to PMS problem, and 62%

of the students whose mothers had PMS complaints. A significant relationship was found between visiting doctors and absence from the university (*p*<0.05) and the presence of PMS (*p*<0.01). None of the students who saw a doctor because of PMS were receiving any medical treatment during the data collection.

Among the students, PMS was determined in 62.3% who remarked that they did not eat an adequate and balanced diet, 58.4% consumed salt and salty food, 59.9% consumed coffee, 59.2% consumed chocolate and products containing chocolate, and 63% had a high fat and high-calorie intakes. It was determined that more significant PMS was observed in the students who ate high fat and high-calorie foods (*p*<0.01). No significant correlation was found between the other nutritional habits and PMS (this is not indicated in the tables). A significant relationship was found between the risk of depression and the PMSS total score and the scores for anxiety, fatigue, irritability, depressive

Table 1 - Relationship between premenstrual syndrome (PMS) and the sociodemographic characteristics of the students (N=618).

Characteristics	PMS Yes	PMS No	*p*-value*
Age			
<20	197 (57.3)	147 (42.7)	0.642
≥20	162 (59.1)	112 (40.9)	
School/faculty			
Faculty of Medicine	52 (52.0)	48 (48.0)	0.174
Vocational School of Healthcare	67 (56.8)	51 (43.2)	
Faculty of Nursing	202 (58.4)	144 (41.6)	
School of Physical Therapy and Rehabilitation	38 (70.4)	16 (29.6)	
Father's education			
<High school	198 (61.5)	124 (38.5)	0.074
≥High school	161 (54.4)	135 (45.6)	
Mother's education			
<High school	257 (60.0)	171 (40.0)	0.139
≥High school	102 (53.7)	88 (46.3)	
Parents' living together			
Living together	323 (57.0)	244 (43.0)	0.059
Separately	36 (70.6)	15 (29.4)	
Place of residence			
Dormitory	232 (59.2)	160 (40.8)	0.309
With family	63 (52.1)	58 (47.9)	
Alone	64 (61.0)	41 (39.0)	
Economic situation perception			
Bad-very bad	25 (80.6)	6 (19.4)	0.030**
Middle	226 (58.2)	162 (41.8)	
Good-very good	108 (54.3)	91 (45.7)	

Values are number and percentage (%). *Pearson chi-square, **Chi-square for trend test, PMS - Premenstrual syndrome.

Table 2 - Relationship between premenstrual syndrome (PMS) and the students' habits and health situation.

Characteristics	PMS Yes	PMS No	*P*-value*
Smoking			
Yes	58 (68.2)	27 (31.8)	0.041
No	301 (56.5)	232 (43.5)	
Alcohol			
Yes	145 (63.3)	84 (36.7)	0.043
No	214 (55.0)	175 (45.0)	
Body mass index (kg/m²)			
≤24.99	321 (59.1)	222 (40.9)	0.164
≥25.00	38 (50.7)	37 (49.3)	
Regular physical excercise			
Yes	56 (52.3)	51 (47.7)	0.185
No	303 (59.3)	208 (40.7)	
Presence of chronic disease			
Yes	30 (78.9)	8 (21.1)	0.007
No	329 (56.7)	251 (43.3)	
Anemia			
Yes	165 (63.0)	97 (37.0)	0.035
No	194 (54.5)	162 (45.5)	

Values are number and percentage (%), *Pearson Chi-square test.

thoughts, pain, sleep changes, and abdominal bloating in the PMSS subscales (*p*<0.01) (**Table 3**).

The students' perceptions of their economic status, smoking and drinking alcohol, chronic illnesses and anemia, the habit of eating high fat and high-calorie foods and the risk of depression were put into the model together and logistic regression analysis was performed. It was determined that having a chronic illness, the habit of eating fatty and high-calorie foods and the existence of the risk of depression had a significant impact on the presence of PMS. It was found that PMS was observed 2.35 times (95% CI=1.03-5.39) more in students who had chronic illnesses. It was seen 1.59 times (95% CI= 1.12-2.26) more in students who habitually ate high fat and high-calorie diet. Premenstrual syndrome was observed 3.52 times (95% CI=2.26-5.49) more in the students who had a risk of depression (**Table 4**).

Discussion. It is known that PMS is a health problem, which affects the physical, social and psychological health of girls especially during adolescence with the beginning of the menarche. For this reason, the frequency of PMS and the factors influencing it in first-year students in universities were analyzed in this research. It was determined that more than half of the students (58.1%) who participated in our research experienced PMS. The prevalence of

Table 3 - Relationship between depression risk and premenstrual syndrome (PMS) symptoms among 618 females.

PMSS subscales	Depression risk		*p*-value#
	Yes	No	
Depressive affect	23.89 ± 6.09	18.62 ± 6.84	0.001
Anxiety	17.52 ± 6.41	13.18 ± 5.89	0.001
Fatigue	20.84 ± 5.08	17.61 ± 6.74	0.001
Irritability	17.32 ± 5.28	13.91 ± 4.44	0.001
Depressive thoughts	20.08 ± 6,59	14.58 ± 6.32	0.001
Pain	9.81 ± 4.56	7.91 ± 3.46	0.001
Appetite changes	10.22 ± 3.20	9.65 ± 3.54	0.075
Sleep changes	8.51 ± 3.27	6.87 ± 3.40	0.001
Abdominal bloating	9.80 ± 3.46	8.91 ± 3.80	0.010
Total PMSS	137.99 ± 29.68	111.23 ± 34.32	0.001

Values are MeanSD, #Independent samples t test, PMSS - premenstrual syndrome scale

Table 4 - Analysis of the factors which have an impact on PMS prevalence with logistic regression analysis.

Variables	N	PMS		OR (95% CI)
		n	(%)	
Perception of economic situation				
Good-very good	199	108	(54.3)	1.00
Middle	388	226	(58.2)	1.15 (0.80-1.66)
Bad-very bad	31	25	(80.6)	2.56 (0.96-6.78)
Presence of chronic disease				
No	580	329	(56.7)	1.00
Yes	38	30	(78.9)	2.35 (1.03-5.39)*
Anemia				
No	356	194	(54.5)	1.00
Yes	262	165	(63.0)	1.23 (0.87-1.75)
Smoking				
No	533	301	(56.5)	1.00
Yes	85	58	(68.2)	1.20 (0.69-2.08)
Alcohol				
No	389	214	(55.0)	1.00
Yes	229	145	(63.3)	1.12 (0.76-1.64)
Eat fast food and fatty foods				
No	232	116	(50.0)	1.00
Yes	386	243	(63.0)	1.59 (1.12-2.26)†
Depression risk				
No (BDI <17)	460	232	(50.4)	1.00
Yes (BDI ≥17)	158	127	(80.4)	3.52 (2.26-5.49)†

*$p<0.05$, †$p<0.01$, BDI - Beck depression inventory, OR - odds ration, 95% CI - 95% confidence interval

PMS ranges between 36.3-91.8% in research carried out on students living in Turkey.[8-17] These prevalence ranges between 32.7-99.5% in different countries.[18-24] Different findings about the prevalence of PMS in the research conducted may be as a result of the use of different diagnostic scales as well as the research being conducted on different ages and different sociocultural and socioeconomical groups.[9,19,22,24] According to the PMSS used in this research, it was found that it was more correct to evaluate the presence or absence of PMS according to the total scores, not by evaluating PMS severity in 3 sets.[25] In 2 different research studies carried out on women in the reproductive age group between 15-49 years in Turkey, the prevalence of PMS was seen to be 40% and 90% respectively.[26,27] In one of these studies, it was found that the women in the younger age group had more risk of PMS.[27] Although PMS is very commonly observed in women, it was reported that treatment was not necessary for light symptoms but that those with moderate and severe symptoms should be evaluated and treated correctly.[19,21,27]

No significant correlation was determined between the students' family histories and the presence of PMS in our research. Some research results in the literature support our findings.[12,15,16,21,22] In one of the studies, it was determined that there was a correlation between sociocultural variables and PMS.[14] Perception of economic status is among the social factors which can affect PMS. In our study, it was determined that more PMS was observed in students whose perception was that their economic status was bad or very bad. No correlation was found between the perception of economic status and PMS in a research study conducted on university students similar to our sample group in Turkey.[12] Perception of income, which is one of the

determinants of social class, may specifically affect students' anxiety and their psychological status and may indirectly affect PMS.[21,22] It is recommended that sociocultural, economic and stressful or depression-inducing situations be evaluated in the treatment of PMS in adolescents.[19,22]

In research conducted in Poland, while no correlation was found between the students' BMI, physical activity, smoking, menstrual cycles and sexual behaviors and PMS, it was determined that there was 3.6 times more PMS in students who lived in metropolitan areas.[23] In the medical literature, it is noted that smoking and drinking alcohol during adolescence is a risk factor for PMS.[8,10,14] In our study, it was found that there was significantly more PMS in students who smoked and drink alcohol. Although there are results supporting our findings in the previous research,[8,10,13,14,26] there are also studies which do not support our results.[12] While Işık et al[15] could not find a correlation between smoking and PMS, they did determine a correlation between drinking alcohol and PMS.[15] In our research, no correlation was found between BMI and doing sports and the presence

of PMS. Results similar to our findings were found in some research in the medical literature[13,22] but it was found in another study that more PMS was observed in obese students.[10] It is recommended that longitudinal studies examining the correlation between obesity and exercise and PMS be conducted.

In this research, it was determined that PMS was significantly more frequent in the students who had chronic illnesses or anemia. Sixty-one percent of the students who participated in the research had incurable illnesses such as bronchitis, asthma, and thyroid illnesses. A correlation between anemia and PMS was found in one of the studies conducted in Turkey[26] but this correlation could not be determined in a second study.[12] Although PMS is observed more in students who consume foods such as salt, coffee, and chocolate, no relationship has been determined between these kind of nutritional habits and PMS. However, it was found that there was 1.6 times more PMS in students who habitually ate high fat and high-calorie foods. While there are results supporting our findings in the medical literatüre,[8,13,14] a correlation was also found between habitual irregular eating and habitual consumption of salt and coffee and PMS in some research.[10,15] The importance of eating a healthy and balanced diet should be explained to the students in order to reduce the symptoms of PMS and to enable them to live a healthy life and they should be helped to change their behavior in this regard.

No significant relationship could be determined between characteristics of the menstrual cycle and PMS. In the previous research, it was seen that the characteristics of the menstrual cycle displayed different results from each other in terms of their correlation with symptoms of PMS.[8,10,12,15,19,22] In the medical literature, it is seen that PMS increases in women with menstrual irregularities[15] and a long menstrual duration and cyclus.[8] In our research, it was found that there was a significant relationship between seeing a doctor and being absent from university because of problems related to PMS and the presence of PMS. It was observed that PMS continued in 70.6% of the students who saw a doctor for any problem related to PMS and in 76.9% of the students who were absent at school. This rate is higher than the result of a research study conducted in Turkey.[8] The PMS averages of the students who saw a doctor for medical help were found to be higher in 2 different studies carried out on students.[8,15] In the medical literature, it is remarked that PMS symptoms are more intense in students whose attendance and academic success at school are affected by menstrual problems.[8,16,18] Tolossa et al[21] determined that academic performance and attendance at university were affected

in the half of the students who experienced PMS.[21] In our research, it was determined that the highest average score received by students from the subscales of the PMS scale was depression. The depression, anxiety, and fatigue dimension average scores were found to be higher than in the medical literature,[12,17] but the other subdimensions for PMS were found to be similar to the medical literature.[14] It was noted that some psychological complaints were repeated in the premenstrual period in some depressive women, so the possibility of depression in women with symptoms of PMS should not be ignored.[7]

In our research, it was seen that there was PMS in the 80.4% of the students who had a risk of depression. The PMSS total score and the PMSS subscales scores, with the exception of the score for changes of appetite, were higher in the students who had a risk of depression. It was seen that there was 3.5 times more PMS in students with a risk of depression. Yucel et al,[9] Balaha et al,[22] and Sadr et al,[20] found a significant relationship between the risk of depression and PMS in studies in which they evaluated the presence of depression using different scales.[9,20,22] The medical literature and the results of our research indicate that students who have PMS should be evaluated in terms of the risk of depression.

The limitations of the study. The most basic limitation of our research is that this research, which is a cross-sectional study, is not strong enough in presenting the cause-and-effect relationship between PMS and the risk of depression. A relationship has been determined between PMS and the risk of depression, but it is unclear that the risk of depression intensified during the period of PMS. The data being collected through a questionnaire and not through clinical examination of the menstrual cycle is another limitation. Since this study was conducted solely on the first year students at a university health campus, the results of the research cannot be generalized to all university students.

The strengths of the study. The results of this research are important because it was carried out on the first year students at DEU health campus and it can be followed up during all the students' academic life. The students were asked to write their names on the questionnaire and 452 students (73.2%) gave their names. Even though it was not among the aims of this research, the results regarding PMS and the risk of depression risk will be reported to the students according to the univeristy's confidentiality policy and support and treatment services will be provided for students who require them. This research may be evaluated with regard to the existing situation and a new follow-up study may be planned in order to better analyse the cause-and-effect relationship.

In conclusion, it was determined that there was PMS in more than half of the students who participated in the research. It was determined that there was more PMS in the students who smoked and drink alcohol. It was determined that there was a relationship between the risk of depression and PMS. It can be foreseen that there will be more symptoms of PMS in students with a risk of depression and diagnostic and treatment procedures should be evaluated accordingly. Seminars and conferences about the impact of unhealthy lifesyles on PMS could be organized. Diagnostic and treatment services could be provided for the students with assistance from gynecology and psychiatry clinics in order to inform them about the risk of depression and help them overcome PMS.

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