**Original Article**

# The Effect of the Coping Methods Used by Nursing Students on the Prevalence of Premenstrual Syndrome

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**Abstract**

**Background:** Premenstrual Syndrome, which negatively affects the quality of life as well as daily life, especially of young women, is among the frequently studied subjects because the coping methods have not been fully identified yet.
**Objective:** This study aimed to determine how the coping methods used by nursing students affect the prevalence of PMS.
**Methodology:** The universe of this descriptive and cross-sectional study was composed of the entire student body attending the nursing department of a vakif (foundation) university while the sample consisted of a total of 102 students with no chronic or gynecological diseases who agreed to participate in the study. A questionnaire form created by the researchers in line with the literature and PMSS were used in the study. The data were collected by the researchers by face-to-face interview method by taking the time periods suitable for the students into consideration.
**Results:** The mean PMSS score was found to be 143.89±25.76 in 70% (n=72) of the students with a mean age of 21.35±1.77 (min:18, max:29) and this score was above the scale cut-off point ≥111. The dietary changes and the state of happiness were found to affect the PMSS score and there was a statistically significant difference between them ($p<.05$). It was concluded that dietary changes, increased fluid intake, psychological support and taking warm showers decreased the PMSS score ($p<.05$) compared to the other coping methods that were investigated in this study. Examination of the regression coefficients showed that the dietary change variable had a positive and significant effect on the PMSS total score. ($\beta=.241$, $p<0.05$).
**Conclusions:** Among the coping methods used by nursing students, the methods that affected the PMSS score the most were concluded to be dietary changes, increased fluid intake, psychological support and taking warm showers.

**Keywords:** Nursing students, Premenstrual Syndrome, Coping methods

## Introduction and Background

Premenstrual Syndrome (PMS), whose etiology and main cause is still unidentified, is presumed to be multifactorial and accepted as a psycho-endocrine disorder. PMS is characterized by a series of physical, psychological and behavioral symptoms that are not due to any organic disease and occur in the luteal phase of the menstrual cycle (Naheed et al., 2017). Although these physical and psychological symptoms disappear within a few days, they can often be difficult to cope with and hence, women's daily activities, work life, social relations, academic performance, quality of life and productivity may be affected (Delara et al., 2012; Direkvand-Moghadam et al. al., 2014). PMS is one of the most common health problems reported by women of reproductive age and is observed in 50-90% of women in that age bracket (Sut and Mestogullari, 2016; Chumpalova et al., 2020). It has been reported that the prevalence varies between 58.1% and 91.8%, especially

among adolescents (Acikgoz, Dayi, and Binbay, 2017), and the prevalence of PMS among university students, which coincides with late adolescence, is reported to be between 50.2% and 80.2% (Alpyilmaz, Avci and Tanri Selcuk, 2014). Some studies concluded that PMS is common in nursing students (Kircan et al. 2012; Kisa et al. 2012; Selcuk, Avci, Yilmaz, 2014) Therefore, it is important to increase nursing students' level of knowledge about PMS and to develop solutions by identifying the prevalence of PMS in different groups and exploring the coping methods.

Despite the high prevalence and significant symptoms of PMS, no reliable treatment has yet been found, and current treatments are only for controlling the symptoms (Biggs and Demuth, 2011). Non-pharmacological methods are more commonly preferred in the treatment of PMS, since the pharmacological treatment used to alleviate these symptoms requires long-term procedures and has many negative effects such as fatigue, headache, anger, depression and gastrointestinal bleeding (Fard et al., 2013; Sehati Shafaie et al., 2018). İn addition, a guideline developed for PMS emphasized that the primary treatment option in patients with PMS should be non-pharmacological (Green et al., 2017). It has been reported in the literature that women use some alternative methods such as herbal medicine, acupuncture, healthy nutrition, increased fluid intake, yoga, meditation, psychological support, stress control and aromatherapy to cope with PMS (Chou, Morse and Xu, 2008; Taavoni et al., 2014; Taguchi et., 2009; Uzuncakmak and Ayaz-Alkaya, 2020; Kucukkelepce et al., 2021; Bakir, Irmak Vural and Korpe, 2021). Although many non-pharmacological approaches have been advocated, few are supported by solid empirical evidence (Freeman, 2010). While previous studies generally focused on the coping methods used by women to alleviate PMS symptoms, this study focused on assessing the extent to which these methods affected the PMS prevalence.

Lifestyle changes are recommended for all women with PMS as the first option in coping with symptoms and these changes may be helpful for the management of mild symptoms. Diet is regarded as the cause of menstrual disorders and changes in diet can be effective in reducing or eliminating PMS symptoms (Habib, Alayed, Al Humedi and Al Msalem, 2014; Seedhom et al., 2013). Different aspects of nutritional status have been associated with the presence and/or severity of PMS (Erbil, 2014). In their study, Isgin et al. (2020) concluded that adolescents who follow a high-quality diet may experience depressive affect, anxiety or less sleep changes than those who follow a low-quality diet. Increasing the fluid intake is another coping method reported in the literature but the results on this method are still inconclusive. In the same vein, Rossignol and Bonnlander (1990) reported in their study that the relationship between premenstrual symptoms and total daily fluid intake is dose-dependent and that fluid intake can affect PMS symptoms when fluid intake is at the highest level. Compared to other coping methods, the effect of increased fluid intake appears to be the least studied method.

Relaxation exercises are thought to reduce the symptoms of PMS by restoring the balance between the sympathetic and parasympathetic nervous system in the autonomic nervous system (Nithyanisha et al., 2019). In their study, Vaghela et al. (2019) reported that both aerobic exercises and yoga poses significantly reduced pain intensity and alleviated the PMS symptoms. They also found significant reductions in the PMS symptoms of patients treated with yoga compared to the PMS symptoms of patients treated with aerobic exercises.

Literature review shows that data on PMS vary from study to study. This difference may be related to the fact that the scales used in the studies are not standardized and may also be explained by the differences in the characteristics of the women in the research groups, such as age, marital status, occupation, education level, and race. However, the high prevalence is a serious condition and indicates that the number of individuals affected by PMS is high. Therefore, the issue needs to be discussed in detail in different small groups.

Based on these reasons, this study sought answers to the following questions:

1. What is the prevalence of PMS in nursing students?

2. What methods are used by the nursing students to cope with PMS?

3. What is the effect of the coping methods used by nursing students on the prevalence of PMS?

**Methodology**

**Research design:** This research was conducted as a descriptive and cross-sectional study.

**Study sample:** The universe of the research consisted of the entire student body (n=120)

attending the 1st, 2nd, 3rd and 4th year of the nursing department at a foundation university and the sample was composed of a total of 102 students with no chronic or gynecological diseases who agreed to participate in the research. The university where the research was conducted is located in the largest province of the country and is one of the largest foundation universities with students from all parts of the country.

**Procedures:** The study was carried out during the period of November 2015-March 2016 after all necessary permissions were obtained. A questionnaire form developed by the researchers in line with the literature and the Premenstrual Syndrome Scale (PMSS) developed by Gencdogan (2006) to evaluate the PMS symptoms were used to collect the research data. Face-to-face interviews were used during data collection by taking the convenient times for the students into consideration.

**Instruments:**The items in the questionnaire focused on participants' socio-demographic characteristics, the prevalence of PMS, the characteristics of their premenstrual periods, the factors that may affect PMS, and the methods they used to cope with PMS. The questionnaire inquired about the methods used to cope with PMS symptoms such as dietary changes, increasing the fluid intake, doing relaxation exercises, doing sports on a regular basis, using vitamins/minerals, using oral-contraceptives, pharmacotherapy, psychological support, yoga, massage, taking warm showers and herbal solutions whose effectiveness is still being researched in the literature.

***Premenstrual Syndrome Scale (PMSS):*** PMSS was developed by Gencdogan (2006) on the basis of DSM-III and DSM-IV-R. The five-point Likert-type scale with 44 items is a valid and reliable identification tool. PMSS is very easy to implement. After participants read an item, they mark the relevant boxes to the right of the item focusing on whether the point in question is prevalent/true "one week before menstruation". The scale is scored as follows: "Never" 1, "rarely" 2, "Sometimes" 3, "Often" 4, and "Always" 5 points. The PMSS has a total of 9 sub dimensions: Depressive affect, anxiety, fatigue, irritation, depressive thoughts, pain, changes in appetite, changes in sleep habits, bloating. The total PMSS score is obtained from the total score of the sub-dimensions. While the lowest score that can be obtained from the scale is 44, the highest score is 220. According to Gencdogan, PMS is present when the PMSS score exceeds 50% of the highest possible score that can be obtained from the total and subscale scores (≥111). The higher the score, the higher the intensity of premenstrual syndrome symptoms (Gencdogan, 2006).

**Limitations:** This research is limited to the 1st, 2nd, 3rd and 4th year female students studying at a vakif university. The results of the research are valid for the research group participants. In addition, data were collected at different times of the participants' menstrual periods. The results cannot be generalized to individuals of the same age and gender. However, the fact that the students at this university are from different parts of the country eases this limitation. Data on PMS were evaluated retrospectively and PMS findings were not followed up and recorded during several consecutive menstrual cycles. remembering the retrospectively may make it more difficult for students, it may increase the subjectivity rate in the prevalence of PMS.

## Results

**Characteristics of Nursing Students':** The mean age of the students included in the study was found to be 21.35±1.77 (min:18, max:29). According to the findings, more than half (60.8%) lived with their families, 21.6% smoked, alcohol consumption rate was 36%, only 17.6% of them did sports regularly, 47.1% had an adequate and balanced diet and 80.4% felt happy. It was identified that the average duration of menstruation for the students was 29.43±6.60 days, 80.4% had regular menstrual cycles and based on their statements, 66.7% of them had PMS in the premenstrual period.

Based on participating students' PMSS scores, it was identified that the mean PMS score was 143.89±25.76 in 70% (n=72) of the students which was above the scale cut-off point ≥111. Compared to students with no PMS, high total and sub-dimension scores in students who had PMS based on the PMSS cut-off point was found to be statistically significant ($p=0.001$; $p<0.01$).

The factors affecting the prevalence of PMS in participating students were compared with the PMSS total (Table 1) and sub-dimension mean scores. Accordingly, it was concluded that students' total and sub-dimension scores increased proportionally with the school year, the total and sub-dimension scores of the students living with their families were lower than those living alone, with a friend or in the dormitory, and the total and sub-dimension scores of the students who smoked and drank were higher. It was found that those

who did sports regularly had lower PMSS total and sub-dimension scores, but this did not create a statistically significant difference (p>0.05).

Table 1. Distribution of Factors Affecting PMS by Students' PMSO Total Score

| Features | n(%) | Mean±SD | p value |
|---|---|---|---|
| **Class**[c] | | | |
| 1st Class | 33(32.4) | 138.51±33.18 | |
| 2. Class | 23(22.5) | 127.04±28.84 | p=.057 |
| 3rd Class | 32(31.4) | 121.15±41.92 | |
| 4th Class | 14(13.7) | 110.28±27.61 | |
| **With whom she lived** | | | |
| **Country** | 16(15.7) | 136.56±38.58 | |
| Alone | 6(5.9) | 143.16±32.31 | p=.362 |
| Friend | 18(17.6) | 123.55±34.22 | |
| Family | 62(60.8) | 123.32±35.24 | |
| **Alcohol use**[c] | | | |
| Yes | 37(36.3) | 156.00±43.55 | |
| No | 62(60.8) | 127.94±29.18 | p=.312 |
| I quit | 3(2.9) | 124.38±38.38 | |
| **Smoking status**[b] | | | |
| Yes | 22(21.6) | 127.15±36.42 | p=.455 |
| No | 80(78.4) | 124.63±32.66 | |
| **Regular exercise**[a] | | | |
| Yes | 18(17.6) | 122.55±31.43 | p=.288 |
| No | 84(82.4) | 127.47±36.43 | |
| **Diet**[c] | | | |
| Carbohydrate-heavy | 7(6.9) | 145.16±25.98 | |
| Protein heavy | 17(16.7) | 140.35±31.40 | **p=.043*** |
| Adequate, balanced | 48(47.1) | 117.43±36.86 | |
| Insufficient, unbalanced | 30(29.4) | 131.33±33.27 | |
| **Water Consumption**[d] | | | |
| 1 lt↓ | 24(23.5) | 122.5±32.33 | p=.773 |
| 1-2 lt | 59(57.8) | 128.61±36.61 | |
| 2 ve ↑ | 19(18.6) | 125.58±37.23 | |
| **Happiness Status**[b] | | | |
| Yes | 82(80.4) | 122.55±31.43 | **p=.013*** |
| No | 20(19.6) | 127.47±36.43 | |
| **Regular Menstruation**[a] Yes | | | |
| No | 82(80.4) | 114.65±29.12 | p=.333 |
| | 20(19.6) | 129.52±36.45 | |
| **Getting information before** [a] | | | |
| Yes | 77(75.5) | 126.37±34.74 | p=.367 |
| No | 25(24.5) | 127.32±38.50 | |
| **Family Problems**[a] | | | |
| Yes | 12(11.8) | 135.33±37.65 | p=.935 |
| No | 90(88.2) | 125.44±35.26 | |
| **Stress**[a] | | | |
| Yes | 93(91.2) | 128.06±35.82 | p=.533 |
| No | 9(8.8) | 111.55±29.58 | |
| **Friends Problems** [a] | | | |
| Yes | 16(15.7) | 144.18±40.55 | p=.628 |
| No | 86(84.3) | 123.33±33.74 | |

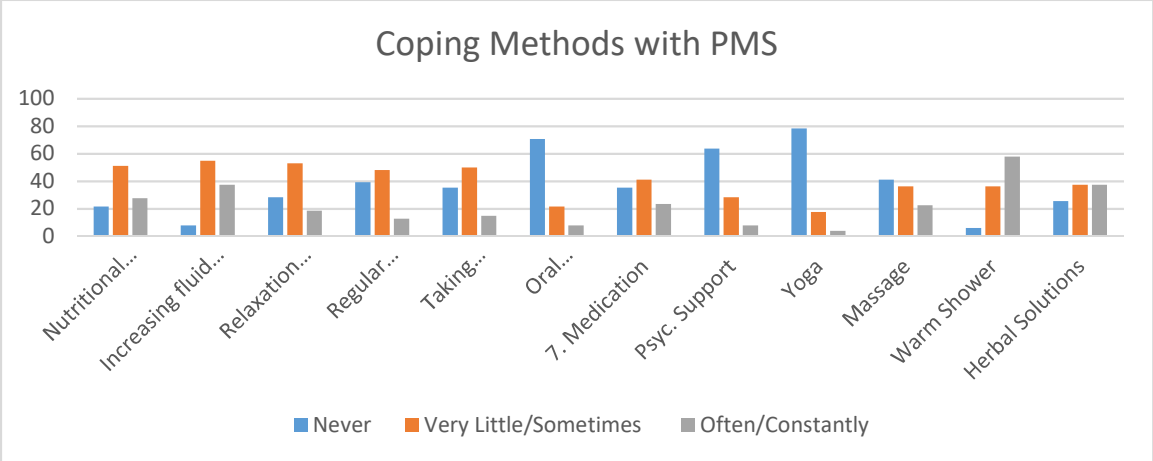
*Student T Testi (a), Mann Whitney Testi (b), One-way ANOVA(c) Kruskall Wallis Testi (d) *p<0,05 **p<0,01*

In regards to nutrition, it was found that the total and sub-dimension scores of the students who had a carbohydrate and protein rich diet and those who had an inadequate/unbalanced diet were higher than those who had adequate and balanced nutrition (p<0.05); The depressive affect sub-

dimension score of those with a carbohydrate-rich diet was found to be higher than those with an adequate-balanced diet (p=0.020; p<0.05). The depressive affect sub-dimension score of those with an adequate-balanced diet was lower than those with an adequate-balanced diet (p=0.004; p<0.01). The depressive affect sub-dimension score of those with carbohydrate-rich diets was higher than those with an adequate-balanced diet (p=0.013; p<0,05). The depressive affect sub-dimension score of those with protein-rich diets was higher than those with fat-rich diets (p=0.038; p<0.05) and the depressive affect sub-dimension score of those with protein-rich diets was found to be higher than those with adequate-balanced diets (p=0.013; p<0,05), which was statistically significant (Table 1). The study found that the amount of water consumption did not cause a change in the total PMSS scores (p>0.05) (Table 1). The change in appetite sub-dimension score of those consuming less than 1 liter of water was lower than those consuming 1-2 liters of water (p=0.018; p<0, 05) and the change in appetite sub-dimension score of those consuming less than 1 liter of water was lower than those consuming 2 liters or more of water. These findings were found to be statistically significant (p=0.046; p<0.05)

The PMSS total score of those who reported being happy was found to be lower than those who reported being unhappy. (p=0.013; p<0.05) (Table 1). It was also found that depressive affect (p=0.004; p<0.01), depressive thoughts (p=0.007; p<0.01) and anxiety (p=0.012; p<0.05) scores of students who reported being happy were lower than those who were unhappy, with a statistically significant difference. It was found that the irritability sub-dimension score of the students who stated that they were not stressed was lower than those who stated that they were stressed (p=0.036; p<0.05), with a statistically significant difference. It was found statistically significant that the irritability (p=0.031; p<0.05) and depressive thoughts (p=0,014; p<0,05) sub-dimension scores of students who reported having no problems with their friends were lower than those who reported having problems.

Graph 1 presents the methods used by the participating nursing students to cope with PMS. Accordingly, 70.6% of the students never used oral contraceptives, 63.7% never used psychological support and 78.4% never used yoga as a coping method. The methods that were sometimes/very little used were dietary changes (51.0%), increasing the fluid intake (54.9%), relaxation exercises (52.9%), doing exercises regularly (48%), and taking vitamins / minerals (50%) while the methods that were often/always used were taking warm showers (57.8%) and herbal solutions (37.8%) (Graph 1). Comparison of students' coping methods and their total PMSS scores shows that as a coping method, change in nutrition (F:6.73; p<.005), increasing the fluid intake (F:3.17; p<.005), relaxation exercises (F:1.90; p<.005), massages (F:3.29; p<.005), and taking warm showers (F:5.33; p<.005) created a statistically significant difference; however, there was no statistically significant difference between total PMSS mean scores and the status of exercising regularly, taking vitamins, using oral contraceptives (OCS), taking medication, receiving psychological support, using yoga and herbal solutions as coping methods against PMS (p>,005).




**Graph 1.** Coping Methods with PMS of Nursing Students

Examination of the relationship between changes in nutrition, one of the ways of coping with PMS and the sub-dimensions of PMS points to a significant relationship between all sub-dimensions except depressive affect (p<.005). This significance was caused by the lower PMSS total and sub-dimension scores obtained by the students who often/always used change in nutrition as a coping method than those who never/rarely made changes in their diets.Examination of the relationship between increasing the fluid intake, one of the ways of coping with PMS and PMS sub-dimensions points to a significant relationship between depressive thoughts and pain sub-dimensions (p<.005). This significance was caused by the lower PMSS total and sub-dimension scores obtained by the students who often/always increased their fluid intake compared to those who never/rarely increased their fluid intake.

Examination of the relationship between receiving psychological support, one of the ways of coping with PMS and PMS sub-dimensions points to a significant relationship between depressive affect, change in appetite and anxiety sub-dimensions (p<.005). This significance was caused by the higher PMSS total and sub-dimension scores obtained by the students who never/rarely received psychological support compared to the students who often/always used psychological support as a method.

While the PMSS total and sub-dimension scores of the participating students who often/always used massage as a coping method were lower than those who never/rarely used it, there was a significant relationship only with depressive affect, change in appetite and anxiety sub-dimensions (p<.005).

It was found that the PMSS total and sub-dimension scores of the participating students who never/rarely took warm showers as a coping method were higher than those who often/always took warm showers. There was a significant relationship (p<.005) between taking a warm shower as a coping method and depressive affect, fatigue, irritability, pain, change in sleep, and anxiety sub-dimensions.

No significant relationship was found between PMSS sub-dimensions and students' use of relaxation exercises, doing sports regularly, taking vitamins/minerals, using OCS, medication and yoga as methods to cope with PMS (p>.005).The correlation between participating nursing students' PMSS total score and the coping methods they used was found to be positive and moderately significant in regards to dietary change (r=.344, p=.000) and weak and significant in regards to increasing the fluid intake (r=.245, p=.013), weak and significant positive relationship with psychological support (r=.206, p=.037) and a weak and significant positive relationship with taking warm showers (r=.263, p=.008) (Table 2).

**Table 2.** Correlation of Coping Methods and PMS Scale Total Score

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Nutritional Change** | r | 1 | | | | | | | | | | | | |
| | p | . | | | | | | | | | | | | |
| **2. Increasing fluid intake** | r | .378** | 1 | | | | | | | | | | | |
| | p | 0 | . | | | | | | | | | | | |
| **3. Relaxation Exercises** | r | .240* | .405** | 1 | | | | | | | | | | |
| | p | 0.015 | 0 | . | | | | | | | | | | |
| **4. Regular Physical Exercise** | r | .243* | .338** | .654** | 1 | | | | | | | | | |
| | p | 0.014 | 0.001 | 0 | . | | | | | | | | | |
| **5. Taking Vita/Mineral Supplements** | r | .213* | .268** | .340** | .485** | 1 | | | | | | | | |
| | p | 0.032 | 0.006 | 0 | 0 | . | | | | | | | | |
| **6. Oral Contraceptive** | r | 0.085 | 0.047 | 0.155 | 0.165 | .344** | 1 | | | | | | | |
| | p | 0.398 | 0.636 | 0.119 | 0.097 | 0 | . | | | | | | | |
| **7. Medication** | r | 0.069 | 0.118 | 0.054 | 0.054 | .278** | .486** | 1 | | | | | | |
| | p | 0.493 | 0.236 | 0.591 | 0.587 | 0.005 | 0 | . | | | | | | |
| **8. Psyc. Support** | r | .273** | .199* | .350** | .389** | .531** | .500** | .393** | 1 | | | | | |
| | p | 0.005 | 0.045 | 0 | 0 | 0 | 0 | 0 | . | | | | | |
| **9. Yoga** | r | 0.148 | 0.074 | .294** | .364** | .430** | .403** | .301** | .552** | 1 | | | | |
| | p | 0.137 | 0.461 | 0.003 | 0 | 0 | 0 | 0.002 | 0 | . | | | | |
| **10. Massage** | r | .201* | .242* | .375** | .301** | .468** | 0.163 | 0.129 | .366** | .362** | 1 | | | |
| | p | 0.043 | 0.014 | 0 | 0.002 | 0 | 0.101 | 0.195 | 0 | 0 | . | | | |
| **11. Warm Shower** | r | .299** | .279** | .195* | .266** | .285** | .214* | .304** | .245* | 0.14 | .268** | 1 | | |
| | p | 0.002 | 0.005 | 0.049 | 0.007 | 0.004 | 0.031 | 0.002 | 0.013 | 0.16 | 0.006 | . | | |
| **12. Herbal Solutions** | r | .221* | 0.155 | .353** | .395** | .471** | .331** | .304** | .349** | .458** | .342** | .388** | 1 | |
| | p | 0.026 | 0.12 | 0 | 0 | 0 | 0.001 | 0.002 | 0 | 0 | 0 | 0 | . | |
| **13. Scale Total** | r | .344** | .245* | 0.161 | 0.112 | 0.177 | 0.068 | 0.102 | .206* | 0.088 | 0.172 | .263** | 0.158 | 1 |
| | p | **0** | **0.013** | 0.107 | 0.261 | 0.075 | 0.495 | 0.308 | **0.037** | 0.376 | 0.083 | **0.008** | 0.113 | . |

*Spearmans's *p<0.05 **p<0.01*

**Table 3.** Findings of the Multiple Linear Regression Analysis on How Coping Methods Predict PMSS Total Score

| **Model 1** | **Variables** | **B** | **S.Hata** | **β** | ***t*** | ***p*** |
|---|---|---|---|---|---|---|
| PMS | (Constant) | 60.595 | 17.166 | | 3.530 | .001 |
| Scale | Nutritional Change | 12.228 | 5.298 | .241 | 2.308 | **.023** |
| Total | Increasing Fluid Intake | 5.661 | 5.999 | .097 | .944 | .348 |
| Score | Psychological support | 4.806 | 5.478 | .086 | .877 | .382 |
| | Warm shower | 8.304 | 5.858 | .142 | 1.418 | .160 |

**R= .403. $R^2$= .162 $F_{(4.97)}$= 4.69. p= .000*. p=.05****

According to Table 3, the multiple linear regression analysis performed to determine the effect of the coping methods used by the nursing students on the PMSS total score was statistically significant ($F_{(4.97)}$=4.69, p<0.001). There was a positive and moderately significant relationship between the independent variables and the scale total score ((R=.403, p<0.001). The independent variables in the model explained 16.2% of the total variance in the severity of PMS prevalence ($R^2$=0.162, p<0.001). Examination of the regression coefficients shows that changes the diet variable (β=.241, p<0.05) had a positive and significant effect on PMS prevalence.

## Discussion

This study aimed to determine the effects of the methods used to cope with PMS by a group of nursing students. To the best of our knowledge, and based on the available literature, this study is one of the few studies examining all coping methods and how these coping methods affect the prevalence of PMS. The study of Kircan et al. (2012), conducted with students of similar age to the students in the present study found the prevalence of PMS as 60% (Kircan et al., 2012) while Kisa et al. calculated it as 57.4% (Kisa, Zeyneloglu and Guler, 2012). Compared to other studies, the prevalence of PMS was higher in this study, with 70%. Kisa et al. (2012) found that exposure to cold air affected the prevalence of PMS for almost all students while one out of every 5 students was affected by the prevalence of PMS due to family problems. Smoking (Erbil, 2014), alcohol (Bertone-Johnson et al., 2009) and coffee consumption (Cheng et al., 2013) was not found to be associated with PMS. While the factors mentioned in the present study were found to affect the prevalence of PMS, a significant difference was identified only between diet and PMS.The Cronbach's alpha coefficient (α = .97) calculated for PMSS in this study was found to be higher than the Cronbach's alpha coefficient calculated for the original scale. Higher Cronbach Alpha coefficient (closer to 1) show that the items in the scale are more consistent with each other and predict the same features (Polit and Beck, 2010). Scale total Cronbach's Alpha coefficient was highly reliable in this study, within very reliable limits in all sub-dimensions. It was concluded in the study that that dietary changes (51.0%), increasing the fluid intake (54.9%), relaxation exercises (52.9%), doing exercises regularly (48%), and taking vitamin/mineral supplements (50%) were sometimes/rarely used as coping methods while taking warm showers (57.8%) and herbal solutions (37.8%) were often/always preferred. / However, many studies in the literature reported that 48.7% of the students preferred pain relief to cope with PMS and the study conducted by Weisz and Knaapen (2009) stated that hormonal therapy and pain relievers are used most frequently in the treatment of PMS in France, and herbal therapy is used mostly in Germany. İn the study conducted with young females attending university in Korea, Jeong et al. (2018) found that young females often preferred non-pharmacological methods in coping with PMS, led by exercise and rest.The study determined that the coping methods that affected the prevalence of PMS in nursing students the most were changes in nutrition, increasing the fluid intake, taking warm showers and receiving psychological support. Barnard et al. (2000) evaluated the effect of a low-fat, vegetarian diet on premenstrual symptoms and reported that a low-fat vegetarian diet led to a reduction in the duration of

premenstrual symptoms. Another study revealed that a carbohydrate-rich diet would increase serotonin levels by preventing edema and fluid retention, and would affect women positively in regard to emotions (Dinc, 2010). The depressive affect sub-dimension score was found to be higher in the present study for students opting for carbohydrate-rich diets compared to the students who preferred adequate-balanced diets (p=0.02; p<0.05). This result suggested that the effect of the nutritional change variable on coping with PMS should be evaluated by more standard forms and in more detail. Subjective assessments make it difficult to obtain irrefutable evidence. Although increasing the fluid intake is recommended as a method to cope with PMS symptoms, studies on the subject have focused on dysmenorrhea rather than PMS. Accordingly, it is reported that water intake is effective in reducing the duration of menstrual bleeding, the use of painkillers, and the severity of pain during the menstrual period (Kazemi, Bokaee and Shirinkam, 2001; Torkan et al., 2021). İn this respect, our study has brought a different perspective to the literature since the students who often/always increased their fluid intake had lower PMSS total and sub-dimension scores than those who never/rarely increased their fluid intake. In addition, a statistically significant difference was found according to the correlation analysis (r=.378, p<.001). The effectiveness of relaxation exercises in coping with PMS was proven in this study as well as was the case in various other studies (Gamal and Shahin, 2015; Ferreira and Kulkarni, 2019; Vaghela et al., 2019; Kucukkelepce et al., 2021). Accordingly, a person who learns to breathe deeply and relax by using the relaxation techniques can control stress and anger, and is able to relax in situations where there is tension along with pain (Braverman, 2007). Given the associated benefits of exercise, it seems reasonable to recommend an exercise program to help alleviate PMS symptoms. Receiving psychological and/or professional support is reported to relieve women and provide positive emotional change (Bosarge, 2003, Ozturk and Tanriverdi, 2010). del Mar Fernandez, Regueira-Mendez, and Takkouche (2019) examined whether the perceived psychological variables, stress, neuroticism, and coping strategies were related to PMS and Premenstrual Dysphoric Syndrome (PMDD) and reported that this situation could not be measured by cross-sectional studies. However, another method found to be effective in coping with PMS in our study was psychological support, and this result supports many cross-sectional studies in the literature. Taking a warm shower was found to be an effective method as a coping method in this study. Accordingly, it was determined that the students who took warm showers as a coping method had lower PMSS total scores, with a statistically significant difference (F:5,33, p<0,05). This result, supported by few studies (Ahn, Hyun and Kim, 2005), should be considered as a variable that should be addressed in future studies.Studies evaluating the methods of coping with PMS in the literature generally focus on a single method. However, focusing on a single method (for example, healthy diet or exercise) arguably limits the effectiveness of the methods. Therefore, this study questioned more than one coping method and the effectiveness of the methods was compared with the others.

**Conclusion:** This descriptive study concluded that among the coping mechanisms used by the participating nursing students; dietary changes, increasing the fluid intake, taking warm showers and getting psychological support were the effective methods. Although there are exposure factors due to the nature of the cross-sectional study, the findings in this study are compatible with the results in the literature. For this reason, it is suggested that studies that will investigate the methods used to cope with PMS should be supported by qualitative models.According to the findings of this study, it can be argued that increasing stress reduction programs for women may be effective in coping with PMS. İt is important to increase the nursing students' knowledge level about PMS and to teach them coping methods. This will contribute to increasing the quality of their lives, the quality of care they will provide after graduation and to prevent PMS-induced psycho-social losses.

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