

## Original Article

## The Relationship Between Premenstrual Symptoms and Healthy Lifestyle Behaviours in the COVID-19 Pandemic

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### Abstract

**Aim:** The aim of the study is to examine the relationship between premenstrual symptoms and healthy lifestyle behaviors during the COVID-19 pandemic process.

**Method:** The research was descriptive and cross-sectional type. The data collected from 407 women between the ages of 18-49. The data was collected with an information form, The Premenstrual Syndrome Scale and The Healthy Lifestyle Behaviour Scale II.

**Results:** The prevalence of premenstrual syndrome was 72.7%. The mean score of the Premenstrual Syndrome Scale was  $132.45 \pm 36.51$ , and the mean score of the Healthy Lifestyle Behavior Scale II was  $120.27 \pm 18.41$ . A significant negative correlation was found between the Premenstrual Syndrome Scale and the Healthy Lifestyle Behavior Scale II. It was found that having irregular menstruation period, experiencing menstrual changes and premenstrual symptom changes significantly increased the mean scores of the Premenstrual Syndrome Scale. Vegetable and fruit consumption, carbohydrate consumption, caffeine consumption and salt consumption were found to affect both premenstrual complaints and healthy life.

**Conclusion:** In the study, it was determined that the prevalence of premenstrual syndrome was high, and the women had a moderately healthy lifestyle. Adopting healthy lifestyle behaviours helps to cope with premenstrual problems.

**Keywords:** COVID-19, Healthy Lifestyle, Premenstrual Syndrome.

### Introduction

Premenstrual Syndrome (PMS) includes somatic, cognitive, emotional, and behavioral symptoms that occur in the luteal phase of the menstrual cycle, disappear with the onset of menstruation and are frequently experienced in the reproductive age (Slap 2003; Rizk et al., 2006). Emotional symptoms of PMS such as depression, outbursts of anger, irritability, crying spells, anxiety, confusion, social withdrawal, poor concentration, insomnia, increased shortness of sleep, changes in sexual desire and thirst, changes in appetite, breast tenderness, bloating and weight gain, have physical symptoms such as headache, swelling of the hands or feet, aches and pains, fatigue, skin problems, gastrointestinal

symptoms, abdominal pain. Many women feel these physical or mental changes in the days before menstruation (ACOG, 2022). Premenstrual complaints negatively affect women's social relations, quality of life, family, school and work life (Kircan et al., 2012).

Healthy lifestyle is the individual's controlling all behaviors that affect health and arranging daily activities by health status. Healthy lifestyle behaviors are behaviors that protect and improve the well-being of individuals. Healthy lifestyle behaviors are presented as a combination of evaluations for healthy nutrition, regular exercise, health responsibility, interpersonal support and stress management. By adopting healthy

lifestyle behaviors, mild to moderate PMS symptoms can be eliminated without the need for pharmacological treatment (Ozturk & Karaca, 2019). Therefore, non-pharmacological methods are the first treatment that should be recommended to patients with PMS. Non-pharmacological methods such as dietary changes, exercise, stress management and relaxation techniques are used in the treatment of PMS. These methods have advantages such as increasing the effectiveness of analgesic drugs, reducing the need for drugs, preventing drug side effects and not bringing too much economic burden. So, lifestyle changes such as exercise, diet, and stress management should be recommended to reduce premenstrual symptoms (Bakir & Balci Yangin, 2019).

The life of the global population has been deeply affected by the COVID-19 pandemic (Phelan, Behan & Owens, 2021). The time spent at home has increased with the isolation applied to minimize the risk of transmission of COVID-19 infection and to reduce overloads on the health system. Such situations change the lifestyle of individuals (Ozkan, 2021). During the COVID-19, various psychological problems such as depression, stress and anxiety have emerged due to developments that affect people's lives in many ways (Celik & Diker, 2021). It is known that stressful periods and psychological distress can affect women's menstrual cycles (Phelan, Behan & Owens, 2021). Although the effect of the COVID-19 virus on ovarian function has not been proven, it is stated that women's menstrual cycles and bleeding amounts change (Li et al, 2021). During the pandemic, women experience intense stress due to factors such as ignorance about the disease, decreased social support due to social isolation, increased cases of violence against women, and economic difficulties (Aolymat, 2021). Considering the undeniable relationship between PMS and stress, it should not be overlooked that women's PMS symptoms will increase during the pandemic process. It is also known that the COVID-19 virus is effective on the gastrointestinal tract. For this reason, the gastrointestinal symptoms experienced in PMS will inevitably increase. Factors such as the change in dietary habits during the pandemic period, and the decrease in the

amount of exercise due to isolation and sedentary life will also cause PMS to increase (Phelan, Behan & Owens, 2021; Bruinvels et al., 2022).

It is known that lifestyle behaviours are important in coping with premenstrual symptoms. It is thought that life changes applied to protect against the COVID-19 virus may adversely affect premenstrual symptoms. This research aim to examine the relationship between premenstrual symptoms and healthy lifestyle behaviors during the COVID-19 pandemic process.

## Methods

**Study design:** The study was descriptive cross-sectional type.

**Sample:** The universe of the study consisted of all women between the ages of 18-49, and the sample size was calculated on power analysis method in the G\*Power (v3.1.7) program. In the study, the prevalence of premenstrual syndrome was considered as the main parameter in calculating the effect value. In the study of Akmalı et al., the prevalence of premenstrual syndrome was found to be 51% in women between the ages of 15-49 (Akmalı, Ozerdogan & Gursoy, 2020). Based on the results of this study; In order to determine the premenstrual syndrome prevalence as 51%, the sample was determined as 502 women with 5% alpha confidence level and 80% power. The data collected with 514 women, and 107 of them who did not meet the research criteria were excluded from study. The data analysis was completed with 407 women. The participation criteria; volunteering to participate, between 18-49 ages, do not have any chronic disease, psychiatric disease and do not use drugs, not being in pregnant, puerperal or lactating period, not using hormonal contraceptive method, not in menopause, knowing Turkish language and no communication barriers (Kircan et al., 2012; Bakir & Balci Yangin, 2019; Bruinvels et al., 2022; Akmalı, Ozerdogan & Gursoy, 2020).

**Data collection:** The data were collected by online method during the 4th wave of the pandemic between July and October 2021. The questionnaire form was uploaded onto the Google Forms platform and advertised on e-mails and social media application (WhatsApp). We ensured that the questionnaire was advertised through many

different cities in Turkey. Approval was obtained from the Ethical Committee of a university. The study was necessary institution permission was obtained. Verbal and written consent was obtained from the participants. The study data was collected with a 47-question information form containing demographic, health status, menstrual period, gynecological information and nutrition habits in COVID-19 period data conducted by the researchers in the light of literature (Ozturk & Karaca, 2019; Li et al, 2021; Aolymat, 2021). Also, The Premenstrual Syndrome Scale (PMSS) and The Healthy Lifestyle Behavior Scale II (HLBS II) was used.

**The Premenstrual Syndrome Scale (PMSS):** The PMSS was developed and validated by GencDogan. The PMSS consists of 44 items and has 9 subscales. These are: “depressive feelings”, “anxiety”, “fatigue”, “irritability”, “depressive thinking”, “pain”, “changed appetite”, “changed sleep”, and “bloating”. The lowest score that can be obtained on the scale is 44, and the highest score is 220. A total score that is more than 50% of the highest score of the original PMSS indicates the existence of PMS (GencDogan, 2006). In the original study, the internal consistency reliability coefficient was reported as 0.750. In this study, the internal consistency reliability coefficient was found as 0.960.

**The Healthy Lifestyle Behavior Scale II (HLBS II):** It was developed by Walker et al. (Walker, Sechrist & Pender, 1987). The validity and reliability study of the HLBS II in Turkey was conducted by Bahar et al. (Bahar et al., 2008). The result of the validity and reliability study conducted for the Turkish version of the scale showed that the Cronbach’s alpha coefficient was 0.920 for the entire scale. This study found the Cronbach’s alpha coefficient of the scale as 0.910. HLBS II consists of 52 items and uses a 4-point Likert type scale including the answers, “never”, “sometimes”, “often” and “routinely”. The HLBS II includes six subscales: health responsibility, physical activity, nutrition, spiritual development, interpersonal relations and stress management. The lowest possible score is 52, while the highest possible score is 208. As the total score increases, the level of healthy lifestyle behaviors increases.

**Ethical considerations:** Ethical approval was obtained from a university social and humanities research and publication ethics for our study (Date: 09.06.2021, Number: 2021/40). Verbal and written consent was obtained from the participants who met the criteria for being included in the research sample and agreed to participate in the research. The study was conducted in accordance with the Declaration of Helsinki.

**Data analysis:** SPSS (Windows 22.0) software was used for data analysis. Descriptive statistical methods (mean, standard deviation, mode, median, frequency, minimum and maximum) were used for statistical analysis of data and Mann Whitney U, Chi square and Spearman’s correlation tests were calculated for determining the relationship between the descriptive tests and scales. Kolmogorov-Smirnov test was used to evaluate the fit for normal distribution.

## Results

The sociodemographic data of women are presented in Table 1. The mean age of women was  $22.44 \pm 5.33$ , and most of them (89.9%) were single. The 52.3% of women had graduate and master education level (n=213). The most of women in the study lived in the Marmara region (70.5%). The 71.0% of them had normal weight (n=289).

Menstrual characteristics of women and menstrual changes in COVID-19 pandemic are shown in Table 2. The mean menarche age was  $13.14 \pm 1.31$ , and the mean menstrual cycle day was  $27.97 \pm 4.85$ . After COVID-19 pandemic, 28.7% (n=117) of the women had irregular menstrual period. The 34.9% (n=142) of women had menstrual changes, and the most seen menstrual changes was increasing in menstrual cycle day (18.7%). The 16.2% of women (n=66) stated that PMS symptoms had increased.

The changes in lifestyle habits during the COVID-19 pandemic are as follows: The most of women (64.6%) stated that their physical activity had decreased. The 57.7% (n=235) of them had sleep problem. It was found that 44.7% of women’ carbohydrate consumption increased, and also 55.3% of women’ processed food consumption increased. While 62.4% of women stated that their caffeine consumption had increased,

80.1% of them stated that their salt consumption had increased.

The mean scores of PMSS and HLBS II are shown in Table 3. According to the PMSS 72.7% of women (n=296) had premenstrual syndrome. The mean PMSS score was  $132.45 \pm 36.51$ , and the mean HLBS II score was  $120.27 \pm 18.41$ .

The correlation between PMSS and HLBS II are shown in Table 4. A statistically significant negative and weak correlation was found between PMSS and HLBS II ( $r = -0.168$ ;  $p < 0.05$ ).

The relationship between characteristics of women and PMSS and HLBS II are presented

in Table 5. A statistically significant difference was found between PMSS and regularly menstruation period ( $p < 0.05$ ). The PMSS score was statistically significant higher of the women who had menstrual changes ( $p < 0.05$ ). There was a statistically significant difference between fruit and vegetable consumption and PMSS ( $p < 0.05$ ) and HLBS II ( $p < 0.05$ ). The women whose carbohydrate consumption increased had higher PMSS score ( $p < 0.05$ ) and had lower HLBS II score ( $p < 0.05$ ). While there was no statistically significant difference between caffeine consumption and HLBS II score ( $p > 0.05$ ), it was found a statistically significant difference between PMSS score ( $p < 0.05$ ).

**Table 1. Characteristics of Women**

Variables		$\bar{X} \pm (SD)$	Min-Max
Age		$22.44 \pm 5.33$	18-46
		<b>n</b>	<b>%</b>
Marital Status	Single	366	89.9
	Married	41	10.1
Education Level	Primary School	18	4.4
	High School	176	43.2
	Graduate and Master	213	52.3
Family Type	Nuclear Family	349	85.7
	Extended Family	58	14.3
Income Status	Lower Than Expenditure	96	23.6
	Equal To Expenditure	254	62.4
	Higher Than Expenditure	57	14.0
Living Region	Marmara	287	70.5
	Eastern Anatolia	24	5.9
	Aegean	13	3.2
	Blacksea	33	8.1
	Central Anatolia	10	2.5
	Mediterranean	20	4.9
	Southeastern Anatolia	20	4.9
BMI	Underweight (<18 kg / m <sup>2</sup> )	43	10.6
	Normal Weight (18-24.9 kg / m <sup>2</sup> )	289	71.0
	Overweight (25-30 kg / m <sup>2</sup> )	57	14.0
	Obese (> 30 kg / m <sup>2</sup> )	18	4.4

**Table 2. Menstrual Characteristics of Women and Menstrual Changes in COVID-19 Pandemic**

Menstrual Characteristics		$\bar{X} \pm (SD)$	Min-Max
<b>Menarche Age</b>		13.14±1.31	9-17
<b>Menstruation Cycle (Day)</b>		27.97±4.85	13-70
<b>Menstrual Bleeding (Day)</b>		5.96±1.29	2-10
		<b>n</b>	<b>%</b>
<b>PMS Symptoms in Mother or Sister</b>	Yes	194	47.7
	No	213	52.3
<b>Menstrual Changes in COVID-19 Pandemic</b>			
<b>Regularly Menstruation Period</b>	Yes	290	71.3
	No	117	28.7
<b>Changes in Menstruation</b>	Yes	142	34.9
	<i>Decrease in Menstrual Cycle Day</i>	26	6.4
	<i>Increase in Menstrual Cycle Day</i>	76	18.7
	<i>Decrease in Menstrual Bleeding Day</i>	12	2.9
	<i>Increase in Menstrual Bleeding Day</i>	5	1.2
	<i>Increase in Menstrual Bleeding</i>	5	1.2
	<i>Decrease in Menstrual Bleeding</i>	12	2.9
	<i>Dysmenorrhea</i>	36	8.8
	No	265	65.1
<b>Changes in Premenstrual Complaints</b>	Yes	50	12.3
	<i>Tension</i>	16	3.9
	<i>Dysmenorrhea</i>	19	4.7
	<i>Increase in Menstrual Bleeding</i>	8	2.0
	<i>Irregular Menstrual Period</i>	4	1.0
	No	357	87.7
<b>PMS Symptoms</b>	Increase	66	16.2
	Decrease	9	2.2
	No Change	332	81.6

**Table 3. The Mean Scores of PMSS and HLBS II**

Scales	PMSS Score > 50% of Total Score	PMSS Score < 50% of Total Score
	n (%)	n (%)
<b>PMSS</b>	296 (72.7)	111 (27.3)
	$\bar{X} \pm (SD)$	Min-Max
<b>PMSS</b>	132.45±36.51	44-220
<i>Depressive Feelings</i>	23.08±6.76	7-35
<i>Anxiety</i>	15.16±5.86	7-35
<i>Fatigue</i>	23.08±7.01	6-30
<i>Irritability</i>	15.86±5.45	5-25
<i>Depressive Thought</i>	19.53±7.66	7-35
<i>Pain</i>	8.90±3.30	3-15
<i>Changes in Appetite</i>	9.57±3.52	3-15
<i>Changes in Sleeping Habits</i>	8.70±3.22	3-15
<i>Bloating</i>	8.54±3.55	3-15
<b>HLBS II</b>	120.27±18.41	48-192
<i>Health Responsibility</i>	19.17±4.50	10-40
<i>Physical Activity</i>	15.38±4.28	5-20
<i>Nutrition</i>	19.05±3.71	6-24
<i>Spiritual Development</i>	24.48±4.70	13-52
<i>Interpersonal Relations</i>	24.44±4.53	7-28
<i>Stress Management</i>	17.73±3.44	7-28

**Table 4. The Correlation Between PMSS and HLBS II**

Scales	HLBS II	Health Responsibility	Physical Activity	Nutrition	Spiritual Development	Interpersonal Relations	Stress Management
	r	r	r	r	r	r	r
<b>PMSS</b>	<b>-0.168*</b>	-0.096	-0.073	<b>-0.131*</b>	<b>-0.230*</b>	-0.030	<b>-0.185*</b>
<i>Depressive Feelings</i>	<b>-0.166*</b>	<b>-0.117*</b>	-0.054	<b>-0.155*</b>	<b>-0.201*</b>	-0.031	<b>-0.183*</b>
<i>Anxiety</i>	<b>-0.128*</b>	-0.038	-0.016	-0.069	<b>-0.241*</b>	-0.077	<b>-0.110*</b>
<i>Fatigue</i>	<b>-0.189*</b>	<b>-0.133*</b>	<b>-0.120*</b>	<b>-0.144*</b>	<b>-0.214*</b>	-0.039	<b>-0.186*</b>
<i>Irritability</i>	-0.069	-0.021	-0.050	-0.097	<b>-0.099*</b>	-0.046	<b>-0.101*</b>
<i>Depressive Thought</i>	<b>-0.235*</b>	<b>-0.139*</b>	-0.065	<b>-0.117*</b>	<b>-0.343*</b>	<b>-0.130*</b>	<b>-0.225*</b>
<i>Pain</i>	-0.091	-0.030	-0.057	<b>-0.103*</b>	-0.095	0.003	<b>-0.136*</b>
<i>Changes in Appetite</i>	0.023	-0.017	0.013	-0.005	-0.005	<b>0.117*</b>	<b>-0.028</b>
<i>Changes in Sleeping Habits</i>	<b>-0.156*</b>	-0.085	-0.062	-0.095	<b>-0.209*</b>	-0.049	<b>-0.196*</b>
<i>Bloating</i>	-0.013	0.013	-0.076	-0.067	-0.002	-0.086	-0.031

\*: p<0.05

**Table 5. Relationship Between Characteristics of Women and PMSS and HLBS II**

Menstruation Changes in COVID-19 Pandemic		PMSS		HLBS II	
		$\bar{X}\pm(SD)$	*Z <sub>MWU</sub> **p	$\bar{X}\pm(SD)$	Z <sub>MWU</sub> p
<b>Regularly Menstruation Period</b>	<i>Yes</i>	<b>129.46±36.38</b>	<b>-2.520</b>	120.06±17.75	-0.117
	<i>No</i>	<b>139.88±35.90</b>	<b>0.012</b>	120.81±20.01	0.907

<b>Changes in Menstruation</b>	<i>Yes</i>	<b>140.32±34.31</b>	<b>-3.088</b>	121.01±18.69	-0.413
	<i>No</i>	<b>128.24±37.01</b>	<b>0.002</b>	119.88±18.28	0.679
<b>Changes in Premenstrual Complaints</b>	<i>Yes</i>	<b>149.34±31.25</b>	<b>-3.426</b>	123.12±16.30	-1.148
	<i>No</i>	<b>130.09±36.60</b>	<b>0.001</b>	119.87±19.67	0.251
<b>Lifestyle Habits Changes in COVID-19 Pandemic</b>		$\bar{X}\pm(\text{SD})$	<b>**<math>\chi^2</math></b> <b>p</b>	$\bar{X}\pm(\text{SD})$	<b><math>\chi^2</math></b> <b>p</b>
<b>Fruit and Vegetable Consumption</b>	<i>Not Eating</i>	<b>112.00±20.29</b>	<b>9.121</b>	<b>116.66±10.11</b>	<b>15.067</b>
	<i>Increase</i>	<b>130.04±36.82</b>	<b>0.028</b>	<b>124.04±16.74</b>	<b>0.002</b>
	<i>Decrease</i>	<b>147.45±28.27</b>		<b>114.13±14.72</b>	
	<i>No Change</i>	<b>132.07±38.18</b>		<b>118.11±14.13</b>	
<b>Carbohydrate Consumption</b>	<i>Not Eating</i>	<b>133.00±00.00</b>	<b>17.443</b>	<b>110.00±00.00</b>	<b>9.066</b>
	<i>Increase</i>	<b>140.66±00.00</b>	<b>0.001</b>	<b>118.07±00.00</b>	<b>0.028</b>
	<i>Decrease</i>	<b>114.94±00.00</b>		<b>133.89±00.00</b>	
	<i>No Change</i>	<b>126.79±00.00</b>		<b>121.01±00.00</b>	
<b>Caffeine Consumption</b>	<i>Not Eating</i>	<b>126.16±23.05</b>	<b>11.187</b>	115.00±12.45	2.608
	<i>Increase</i>	<b>136.64±35.01</b>	<b>0.011</b>	119.40±18.85	0.456
	<i>Decrease</i>	<b>132.21±39.29</b>		123.52±15.10	
	<i>No Change</i>	<b>124.24±38.39</b>		121.71±18.07	
<b>Salt Consumption</b>	<i>Not Eating</i>	<b>137.25±32.69</b>	<b>21.213</b>	<b>126.77±17.77</b>	<b>7.434</b>
	<i>Increase</i>	<b>128.92±36.85</b>	<b>0.000</b>	<b>120.30±18.77</b>	<b>0.024</b>
	<i>Decrease</i>	<b>154.26±38.35</b>		<b>114.88±14.40</b>	
	<i>No Change</i>	<b>00.00±00.00</b>		<b>00.00±00.00</b>	

\*Z<sub>MWU</sub>: Mann Whitney U

\*\*p&lt;0.05

\*\*\* $\chi^2$ : ChiSquare

## Discussion

In this study, which was conducted to examine the relationship between premenstrual symptoms and healthy lifestyle behaviors in the COVID-19 pandemic, the prevalence of PMS was found to be 72.7%. In studies conducted during the COVID-19 pandemic, the prevalence of PMS was 77.9% (Dogan Yuksekol, Kaya & Nazik, 2021), the incidence of dysmenorrhea was 94.8%, the rate of severe dysmenorrhea was 49.9% (this rate was 36.9% before COVID-19) (Aolymat, 2021). It is thought that high PMS prevalence, which is similar to the literature, is the result of the negative effects of the pandemic process on women in physical, social, mental and behavioural aspects.

In this study, the mean total PMSS score of the women was found to be  $132.45 \pm 36.51$ . In the literature, there are studies in which the mean total score of PMSS is higher (Genk Koyuncu & Olmez Yalazi, 2021) and similar (Aydin Kartal & Kaykisiz, 2020) in the COVID-19 pandemic. In this study, it was determined that the highest mean sub-dimensions scores of PMSS were depressive feelings, fatigue, depressive thoughts. When the studies conducted during the COVID-19 pandemic were examined, with similar results in the literature (Genk Koyuncu & Olmez Yalazi, 2021; Aydin Kartal & Kaykisiz, 2020). In studies conducted before the pandemic, it was found that the mean total score of PMSS was lower (Bakir & Balci Yangin, 2019; Aba et al, 2018; Topatan & Kahraman 2020). In line with the study findings and literature, it was stated that the pandemic process exacerbated premenstrual problems in women; and in the context of premenstrual syndrome, it is understood that it emphasizes the tendency to depression and fatigue.

In this study, the mean score of the women's HLBS-II scale was found to be  $120.27 \pm 18.41$ . The weakest healthy lifestyle behaviours of women were physical activity and stress management. In the literature, there are studies in which the mean score of HLBS-II scale was found to be  $137.64 \pm 23.35$  (Oge et al, 2021) and  $126.37 \pm 18.58$  during the pandemic period (Uysal & Argin 2021). Lifestyle behaviours of individuals have changed due to practices such as isolation,

remote working, and staying at home for the control of the pandemic, and as can be understood from study finding and other studies that women lead a moderately healthy life. It is important to acquire and maintain behaviors such as physical activity and stress management that can provide a healthy lifestyle.

In this study, a significant negative correlation was found between the PMSS total score and the HLBS-II total score. According to this relationship, as the PMSS total score of the women increases, the HLBS-II total score decreases. In the literature, similar results were found in the study conducted before the pandemic (Uzuner & Koçak 2019). The study of Mohebbi et al. (Mohebbi et al., 2017) showed that an appropriate lifestyle can reduce the severity of PMS. In the study of Guney et al. (Guney et al, 2017), it was found that some menstrual cycle disorders were less common in students with high physical activity levels and premenstrual syndrome symptoms were milder. Aolymat et al. (Aolymat, 2021) found that dysmenorrhea was significantly associated with disruptions in sports and daily activities during the pandemic. Regular physical activity and exercise can reduce the risk of health problems such as stress, anxiety and depression (Ozkan, 2021). In line with our study findings and the literature, it is recommended that women be made aware of healthy lifestyle behaviours that are effective in reducing the severity of premenstrual complaints. It is understood that lifestyle is important for a healthy menstruation process.

In this study, it was found that having irregular menstruation, changes in the menstrual cycle and premenstrual symptom changes significantly increased the mean PMSS scores. In the study of Dogan Yuksekol et al. (Dogan Yuksekol, Kaya & Nazik, 2021), it was determined that there were negative changes in menstrual characteristics and PMS complaints of the students during the pandemic process. It is thought that the negative effects of the COVID-19 pandemic affect healthy lifestyle behaviours and cause development of menstrual changes in women. Maintaining a healthy life can positively affect premenstrual complaints.

In this study, while the PMSS scores of participants whose vegetable and fruit consumption decreased, their HLBS-II scores decreased. While the PMSS scores of participants whose carbohydrate consumption increased, the HLBS-II scores of those whose carbohydrate consumption decreased, increased. Participants with increased caffeine consumption had higher PMSS scores. While the PMSS scores of participants whose salt consumption decreased, their HLBS-II scores decreased. Aydin Kartal and Kaykisiz, (2020), found in their study that the eating behaviors of students changed during the COVID-19 pandemic and that premenstrual symptoms differed according to their eating attitudes. It is understood that the change in eating habits affects premenstrual problems and healthy life. Nutritional adjustments are needed to alleviate the prevalence of PMS and the severity of symptoms. Increasing the consumption of vegetables and fruits, reducing the consumption of carbohydrates, reducing the consumption of caffeine, balancing the consumption of salt will affect both the reduction of premenstrual complaints and the provision of a healthy life. Regulation of nutrition and diet is very important in terms of both healing of PMS and maintaining a healthy life.

**Conclusion:** In this study, it was determined that the prevalence of PMS among women was high during the COVID-19 pandemic, the severity of premenstrual problems increased, and they had a moderately healthy lifestyle. It has been understood that the severity of PMS problems will decrease with healthy lifestyle behaviours. In the study, it was determined that the subject of nutrition, which is one of the healthy lifestyle behaviours, affects both premenstrual complaints and healthy life in terms of vegetable and fruit consumption, carbohydrate consumption, caffeine consumption, salt consumption. For this reason, it is recommended that women be made aware of nutrition. The results of the study are important for health professions to have knowledge about premenstrual symptoms and healthy lifestyle behaviours in the COVID-19 pandemic. The prevalence of premenstrual symptom was quite higher. And also, during the COVID-19 pandemic, premenstrual problems increased, and healthy

lifestyle behaviours got worse. It is important for women to know that taking responsibility for their health, increasing the level of physical activity, healthy nutrition, spiritual development, interpersonal relationships and stress management are beneficial in coping with premenstrual problems. The results of this study can be a resource for health professionals when planning the care of women with premenstrual syndrome complaints in COVID-19 pandemic.

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## References

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