Original Article

Investigating the quality of life in students with premenstrual syndrome at Shiraz University of Medical Sciences

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ABSTRACT

Premenstrual syndrome (PMS) has negative effects on the quality of life (QoL), physical and mental health, and performance of women. Therefore, this study was conducted to determine the quality of life in students in Shiraz University of Medical Sciences.

This descriptive-analytical cross-sectional study was conducted on 150 female students in 2023. The participants were selected clustering sampling and considering a specific number of students using convenience method . Participants were asked to provide consent to participate in the study.Data gathering tool included Demographic information ,36-item quality of life questionnaire (SF-36), and premenstrual symptoms screening tool (PSST). Analyses were performed using SPSS software version 25.

The participants were 92/1 ± 08/21 aged years, and the prevalence of PMS was74.7%. Menstruation significantly influenced the related quality of life subscales ($p < 0.05$). There was a direct relationship between the premenstrual syndrome score and pain intensity in three physical-behavioral dimensions, social functioning, and general dimension. There was no significant correlation between the quality of life with age and quality of life with body mass index. The intensity of pain had a significant relationship with the physical dimensions of quality of life, but it was not statistically significant in terms of mental health.

. PMS significantly influenced daily activities related to quality of life and homework . Moreover, almost half of the female students experienced the effects of menstruation in their learning environment. Therefore, among female students, the modification of risk factors should be considered a critical intervention point to improve quality of life.

Keywords: Premenstrual Syndrome, Quality Of Life, Students, University of Medical Sciences

Introduction

Premenstrual Syndrome (PMS) is a common health problem among women of reproductive age. It is defined by the American College of Obstetricians and Gynecologists (ACOG) as a complex set of physical and emotional symptoms that occur cyclically one to two weeks before menstruation and then disappear after the menstrual cycle [1].

This syndrome happens after ovulation and in the luteal phase. The symptoms can be in the early, middle, or last days of the luteal phase [2], which include breast tenderness, headache, back pain, fatigue, various degrees of edema in the hands and feet, and changes in desire Sex, bloating, joint and muscle pain, lack of energy, changes in appetite, thirsty . On the other hand, The most common psychological symptoms have been described tension and anxiety, unexplained anger or irritability, depression, crying episodes, difficulty concentrating, aggressiveness, and suicidal tendencies. [3] although there is still no precise and clear definition for PMS [4].

The pooled prevalence of women with PMS in reproductive age reaches 47.8% worldwide. Meanwhile, about 20% of women experience symptoms severe enough to interfere with their daily activities, and the rest have mild to moderate symptoms [5]. Dirkund *et al*. (2014) reported an overall prevalence of PMS of 47.8%. The lowest prevalence reported 12% in France [6]. Also, in a study by Tuzon *et al*. (2023), the prevalence of PMS in Turkey was reported as 52.2%; however, it may vary by region.Related studies in Iran show that about 60% of girls and women of reproductive age suffer from PMS [7].Also, the prevalence is different in other countries such as Thailand (30%),

Japan (9.9%), India (65%), and Bulgaria (60%) [8]. Reports indicate that PMS affects 14-30% of adolescents in Western countries [9].

Women who experience Premenstrual Syndrome (PMS) may have a significantly lower quality of life compared to those who do not experience it. The symptoms associated with PMS, depending on their severity, chronicity, and emotional distress caused by them can lead to increased absenteeism from work, school, or university, decreased work productivity, significant disruption in personal relationships with others, and frequent visits to healthcare providers[10]. Interestingly, 38% of women reported being unable to perform their daily activities regularly during their menstrual cycle, and among the women who had to leave their duties due to symptoms, only 48.6% told their families that menstrual symptoms were the reason [11].To summarize, the impact of PMS on women's lives can be significant, affecting their overall well-being, work, relationships, and daily activities. It is important for healthcare providers to be aware of PMS and its potential consequences during routine checkups [8].

Premenstrual Syndrome (PMS) can complicate the process of puberty due to the appearance of its symptoms during adolescence. PMS can have negative effects on personal relationships, social and academic performance, and ultimately lead to decreased self-esteem, dissatisfaction, and inefficiency in individuals [9]. Therefore, effective educational programs are necessary to help adolescents learn to control their PMS symptoms. It is important to recognize the impact of PMS on adolescents' lives and to provide appropriate support and education to help them manage their symptoms [9].

Since women of reproductive age play an important role in society and bear great family and community responsibilities, their quality of life and work ability are of great importance for the whole society [1]. Depending on the severity of the syndrome (mild to severe), its impact on women's quality of life varies. When this syndrome becomes severe and bothersome and disrupts a person's life, it is called premenstrual dysphoric disorder (PMDD) and can lead to mood swings and worsen depressive symptoms in women [12]. Difficulties in emotion regulation, which are more common among women with PMDD, are also associated with poor quality of life [13]. If women with premenstrual disorder (PMD) experience severe problems and specific limitations in their daily psychosocial functioning, low quality of life are comparable to a major depressive disorder [14,15].In addition to severity PMS can lead to disturbances in relationships, activities, academic performance and also the quality of life [16].However, the latter has been less frequently studied, This study was conducted to investigate the effect of premenstrual syndrome on the quality of life of female students of Shiraz University of Medical Sciences,Iran.

Materials and Methods

This descriptive analytical cross-sectional study was conducted on the participation of 150 first- and second-year female students from Shiraz University of Medical Sciences. The research setting in this study was dormitory centers and faculties affiliated to Shiraz University of Medical Sciences (health, nursing, and medicine). The participants were selected using convenience sampling method and considering a specific number of students from each faculty in 2023 . participants were enrolled in the study after providing informed consent. IRB was obtained from Shiraz University of Medical Sciences .

Demographic information , 36-item quality of life questionnaire (SF-36), and The premenstrual symptoms screening tool (PSST) were used to collect the data.

The form related to the quality-of-life questionnaire contained 36 questions. In Montazeri *et al.*'s research, the content validity and criteria of (SF-36) questionnaire have been evaluated. Cronbach's alpha coefficient calculated in his research for this questionnaire was estimated at 0.78[17].

The premenstrual symptoms screening tool (PSST) was used for the evaluation and diagnosis of PMS. The questionnaire included questions related to sociodemographic characteristics, as well as menstruation-related characteristics, use of medications, and the presence of PMS in the family history. this questionnaire (PSST) has 19 items with 3 components. Items 1-14 measure psychological symptoms and physical symptoms and items 15-19 measure social. In the study of Sieh Bazi *et al.*, The reliability of the questionnaire Cronbach's alpha values ,were 0.9 [18].

We also recorded some habits and medical characteristics (cigarette smoking, tea, coffee, drinks, sweets, cola, special food, obesity, and exercise). The recall bias was avoided by carefully selecting research questions, data collection method, and a prospective study design.Samples were selected at the centers based on the inclusion and exclusion criteria using a goal-oriented method. Due to the simultaneous outbreak of COVID-19, the convenience and availability of online social networks, demographic and quality of life questionnaires were provided through online by WhatsApp and Telegram. In the case of non-cooperation or reluctance, the questionnaires were provided in person, and face-to-face interviews were conducted. Analyses were performed using SPSS 25.0 . Chi-square test was used to test the associations between variables, and multiple linear regression model was used to investigate the effect of studied variables including premenstrual syndrome score and some demographic variables on quality of life. .For all tests, a significance level of 5% was considered .

Results and Discussion

The prevalence of PMS among the studied population was (74.7%). the age range of 150 subjects in the study were 18 to 27 years with a mean of 21.08 $\pm$ 1.92 Most of the subjects (86%) were single. 64.7% of them were in the normal range body mass index.The details related to Sociodemographic characteristics are in **Table 1**.

Table 1. Sociodemographic characteristics students of shiraz university of medical science (n =150)

Variable	Category	Mean (standard deviation) or number(%)
residency	personal	76/7
	Rental and dormitory	23/3
Household income	below 4 million	2/7
	4 to 10 million	50/7
	Above 10 million	46/7
Body mass index	(standard deviation ± mean)	22.17±3/5
Underweight	Under 18 / 5	16/7
normal	18/5 to 25	64/7
overweight	25to 30	15/3
obese	Over 30	3/3
marital status	Single	86
	married	14

Quantitative data (age and body mass index) are in the form of mean ± standard deviation and qualitative data (marital status, etc.) are in the form of number (%).

6% of the studied samples declared the existence of a (chronic) disease. Age at menarche ranged from 10 to 17 years, with a mean of 13.21 ± 1.25 years. Most of them experienced their first period at the age of 12 to 14 years (3/78). The duration of menstrual flow ranged from 3 to 10 days, with a mean of 5.98 ± 1.3 days. Basic Information on menstruation is summarized in **Table 2**.

Table 2. Basic characteristics associated with menstruation students of shiraz university of medical science (n =150)

Variable	Category	Mean (standard deviation) or number(%)
The presence of underlying disease or urinary tract infection		6
	Age at onset of menstruation (years) (standard deviation ± mean).	13/21 ± 1/25
	10 to 11 years	5/3
Age at onset of menstruation (years) (standard deviation ± mean	12 to 14 years	78/3
	15to 17 years	16/7
menstrual status	regular	76/6
	Irregular	23/3
	Interval between two menstrual periods (days) (standard deviation ± mean).	28/22 ± 3/61
	Under 27 days	30/7
Interval between two menstrual periods (days) (standard deviation ± mean).	28to 30 days	54/7
	Above 31	14/7
	Duration of menstrual bleeding in each menstrual cycle, (days) (standard deviation ± mean)."	5/98 ± 1/30
	3 to 4 days	12
Duration of menstrual bleeding in each menstrual cycle, (days) (standard deviation ± mean)."	5 to 7 days	83/3
	8to 10 days	4/7

Dysmenorrhea was found in 74.7% of the female students. A significant percentage of them (51.3%) mentioned the time of first dysmenorrhea in the first year. Timing of pain occurrence during each menstrual cycle of the subjects varied from A few days to a week before the start of menstruation to 24hours or more from the start of menstruation, with 32/7% Simultaneously with the onset of menstruation . Other information in this regard is shown in the **Table 3**. The menstrual characteristics studied showed a statistically insignificant difference between the women with PMS and those without PMS ($p > 0.05$ for all variables).

Table 3. Clinical menstrual Characteristics among Students of shiraz university of medical science (n =150)

Variable	Category	Number (%)
dysmenorrhea		74/7
age of onset of first dysmenorrhea	first year	51/3
	1 to 3 years later	34/7
	After 3 years	14
timing of pain occurrence during each menstrual cycle	A few days to a week before the start of menstruation	27/3
	A few hours before the start of menstruation	22/7
	Simultaneously with the onset of menstruation	32/7

	24hours or more from the start of menstruation	17/3
	Less than an hour	11/3
Duration of pain during each menstrual period (hours)	1 to 6 hours	28
	6to 12 hours	11/3
	12to 24 hours	22/7
	to 96 hours24	26/7
	lower abdominal pain	21/3
Location of pain	Under the abdomen towards the thighs	18
	waist	6/7
	Under the abdomen towards the waist	22/7
	all items	31/3
Absent from class due to menstrual pain	Always	5/3
	Most of the times	14/7
	rarely	49/3
	never	30/7
Effects on daily activities	at all	30
	to some extent	47/3
	Much	21/3
	Very much	1/3

The quality of life score in the studied subjects was calculated based on 100 score , the mean and standard deviation of which are shown in **Table 4**. Accordingly, the overall average score of the quality of life was 64.23 ± 13.87. In general, it can be said that the participants' quality of life in terms of physical health (average 70.36) was higher than mental health (average 58.10). In all dimensions, a higher score indicates a better quality of life in relation to that dimension**.**

Table 4. Quality of life score among Students of shiraz university of medical science (n = 150)

Variable	mean	Standard deviation
Physical performance	86/66	12/67
Fulfillment of role due to physical health	63/5	35/78
Fulfillment of role due to emotional health	45/55	40/58
Energy	57/73	16/78
Emotional well-being	66/13	16/91
Social performance	63/00	18/36
Pain	67/60	21/59
General health	63/70	15/42
Physical health (Subscale of general dimension)	70/36	15/42
Mental health (Subscale of general dimension)	58/10	18/09
Overall quality of life score	64/23	13/87

Pearson's correlation coefficient was used to investigate the relationship between quality of life and PMS score, and the results of this analysis are shown in **Table 5**. Based on the results listed in this table and the probability value obtained from the correlation coefficient test, it was determined that there was a significant and inverse relationship between the quality of life score in all dimensions except the physical function and physical-behavioral dimension of premenstrual syndrome ($p<0.010$). In the social dimension of premenstrual syndrome, a significant relationship was seen only with the quality of life pain score ($r=0.181$ and $p=0.027$). There was no significant relationship in other dimensions. Also, in the general dimension of premenstrual syndrome score, the relationships between this dimension and different aspects of quality of life, including physical function, were significant ($r=0.050$ and $P=0.547$); this relationship was significant and inverse, so that with the increase of premenstrual syndrome scores, their quality of life decreased in these dimensions.

Table 5. Correlation between quality of life dimensions and premenstrual syndrome based SF-36 and PSST questionnaire (n = 150)

Dimensions of quality of life	**Premenstrual syndrome dimensions**					
	Physical - behavioral		**social**			Genaral
	r value	P value	r value	P value	r value	P value
Physical functioning	-0/070	/3980	0/029	/7240	/050 - 0	0/547
Role performance due to physical health	-0/211	***/0100***	- 0/118	/1490	/221 - 0	***0/007***
Role performance due to emotional health	- 0/414	***/001<0***	- 0/013	/8750	/359 - 0	***0/001<***
Energy and vitality	- 0/339	***/001<0***	- 0/009	/9100	/293 - 0	***0/001<***
Emotional well-being	- 0/425	***/001<0***	- 0/043	/6040	/378 - 0	***0/001<***
Social functioning	- 0/499	***/001<0***	- 0/105	/2020	/463 - 0	***0/001<***

Pain	- 0/392	/001 <0	- 0/181	/027 0	/397 - 0	0/001 <
General health	- 0/385	/001 <0	0/064	/434 0	/308 - 0	0/001 <
Physical health	- 0/370	/001 <0	- 0/110	/180 0	/354 -0	0/001 <
Mental health	- 0/537	/001 <0	- 0/046	/576 0	/475 - 0	0/001 <
Overall score of quality of life	- 0/556	/001 <0	0/091	/267 0	/507 - 0	0/001 <

PMS among female students at Shiraz University of Medical Sciences could help address educational and social challenges related to academic performance, quality of life, and social engagement for these students.

PMS among univer sity students at shiraz university of medical science was found to be high (74. 7%.); however, prevalence was relatively low pared to 88.0% among Turkish university students [19], King Saud University (80.1%)[20].

The prevalence of PMS among female medical students at shiraz university of medical science is higher than that reported in Thailand (28–51%)[21], india (%43)[22], Egypt (34%)[23], and Taiwan (39.5%)[24] , King Saud Universities (67.4%) King Abdulaziz University[25], Jeddah (60.9%).[26]. Although it is difficult to explain differences in PMS prevalence, they might pos sibly be due to the different social and ethnic grounds of the participants and our own sample limitations. Furthermore, there is no consensus in the research literature regarding how many symptoms must be present to warrant a PMS diagnosis.

This study found that PMS in these groups was associated with depressive affect, anxiety, fatigue, irritability, bloating, and painful or tender breasts. These factors were most likely related to the diagnosis of PMS and were recognized as alarming. Although these findings are sistent with those in international literature studies[27,28]. we suggest that the similarities may be due to the pants belonging to the same age group and being sity students. The presence of alarming symptoms helps in planning educational sessions to prevent further quences that might distress PMS.

Rezandeh *et al*., the most common physical symptoms were breast tenderness, bloating, weight gain (73%). After that, there are psychological issues such as overeating, crying and greater sensitivity to rejection (>60%). More than 30% of patients reported that moderate to severe symptoms interfered with their social and academic activities [29]. The results of this study are almost consistent with the present study because the statistical population is students and over 18 years old and also the premenstrual screening questionnaire was used.

Mitsuhashi *et al*. aimed to investigate the factors related to the prevalence and severity of symptoms related to menstruationwere investigated [30]. The severity of primary dysmenorrhea (mild vs. severe) and the prevalence of premenstrual syndrome were associated with BMI less than 18.5 kg/m2 and smoking, respectively, and the results of this study are because the statistical population of both age groups is over 20 years is inconsistent with the present study.

The quality of life score was higher in people living in their own homes, but it was not statistically significant. On the other hand, the quality of life score was higher in married people, but the difference was not statistically significant. The intensity of pain had a significant relationship with the physical dimensions of quality of life, but this relationship was also observed in the psychological dimension, but it was not statistically significant.The mean score of mood, physical and behavioral symptoms was higher than that of social functioning. Also, there was no significant relationship between the PMS score and demographic characteristics. There was a direct relationship between the premenstrual syndrome score and pain intensity in three physical-behavioral dimensions, social functioning, and general dimension, which was statistically significant in the physical-behavioral dimension and the general dimension; however, in the social functioning dimension, this relationship was statistically significant. The relationship was close to significance. The overall mean score of the quality of life in the studied subjects was 64.23, which indicates that the quality of life was higher than the average in this sample, which was more in the physical health dimension than in the mental health dimension. In this study, there was no significant correlation between the quality of life with age and quality of life with body mass index. Castrianti and Hormexy before menstruation and quality of life on 207 female nursing students of Karia Hesada University of Medical Sciences, Semarang in Indonesia, issues related to physical health (mean 41.38 $\pm$ 8.52 and $P< 0.05$), psychological (mean 44.22 $\pm$ 10.46 and $P< 0.05$), social relations (mean 47.70 $\pm$ 9.94 and $P<0.05$) and environmental domain (mean 46.25 $\pm$ 11.63 and $P<0.05$) were significantly higher in women with PMS [31]. Compared to the results obtained in this study in the field of physical health, both in terms of function and in terms of playing a role due to physical and emotional health, the average scores are higher (86.66, 63.5, 45.55). In the psychological field, the scores were significantly higher (58.10). Also, in the field of social functioning, the average scores in this study are higher (63.00). The results of this study are consistent with the present study considering that the statistical population of both were medical students.

Related studies around the world also confirm the results of the present study and show that women in the premenstrual period are faced with a decrease in functional level, social relationships and a decrease in self-satisfaction. In another study conducted by Ulkumen *et al*. (2014) with the aim of evaluating the relationship between PMS and quality of life among 228 medical students in Turkey, it was shown that the prevalence of PMS was 91.8% and the quality of life scores were between 17.00 and 97.00. The severe PMS group was the lowest, where family history, alcohol consumption, stressful events, and high-fat diets increased the PMS severity and decreased quality of life scores. The results indicated that PMS affected the quality of life moderately [32].

This study showed that menstruation significantly affected related quality of life ($p < 0.05$). Almost all participants were

affected at different levels. The students experienced severe symptoms that affected their daily activities and negatively impacted their academic performance. Studies have reported that the severity of PMS prevents normalities and significantly affects quality of life and demic performance[33,34].Also, in another study conducted by Kahyaoglu *et al*. (2015) with the aim of investigating the effect of premenstrual syndrome on work-related quality of life in 134 Turkish volunteer nurses, the prevalence of PMS was 38.1%. All WRQoL subscale scores except for workplace stress were significantly lower in nurses with PMS than those without PMS [35]. A cross-sectional study was conducted by Islamlou *et al*. (2015) on 142 unmarried female medical students of Urmia University of Medical Sciences to investigate the relationship between premenstrual syndrome and quality of life. The score of quality of life was low in more than half of the medical students, especially in psychological and social components (P>0.05). Although the score of quality of life in mental health (P = 0.02) and environmental health (P = 0.002) was significant, it decreased with the increase of the mean score of PMS.

The results of the prevalence of premenstrual syndrome and its severity indicated that PMS was common in medical students and this negatively affected some areas of their quality of life [36]. In so doing, the university's administrative staff could consider the unique situation of female students and could help them academically and psychologically. However, the study is limited to the current research because of medical students. Therefore, without further evidence, the results or conclusions may not be sentative of a larger population.

Conclusion

The results of this study indicated a decrease in the quality of life during the premenstrual phase in women. The findings showed the impact of premenstrual syndrome on quality of life, and there was a significant negative relationship between them. Therefore, it is suggested that education and counseling should be used to increase knowledge about the symptoms and therapeutic strategies of premenstrual syndrome in women in order to improve the overall quality of life.

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Conflict of interest: None

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Ethics statement: This study was conducted in Shiraz University of Medical science. Each participant was enrolled in the study after providing informed consent.

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