Premenstrual Syndrome: Presence, Knowledge, and Attitude among Female University Students

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ABSTRACT

Background and objectives: Premenstrual syndrome (PMS) is fairly high and may interfere with personal and social activities. The current study aims to identify the frequency of experiencing PMS symptoms among students, assess their knowledge and attitude towards PMS and identify their perception of whether PMS has an impact on the academic lives of female university students.

Methods: A quantitative cross-sectional study was applied to the current study. An online survey using Google form was conducted among female university students at the College of Nursing/Hawler Medical University. A total of 222 students participated in the current study. A questionnaire was designed to assess PMS symptoms using the criteria of the American College of Obstetricians and Gynecologists, students' knowledge and attitude towards PMS, the impact of PMS on daily living activity and academic performance, and self-management options.

Results: The mean age (+Standard deviation) of the students was 20.77 (+1.876) years and the mean for calculated BMI of students was 22.42kg/m2. The majority of students (70.3%) had regular menstrual cycle with 86% of them having moderate amount of menstrual blood flow. More than half (53.6%) of students responded that they experience PMS, and 34.7% responded that they do not experience PMS. More than half (52.3%) of students obtained good knowledge score and positive attitude towards PMS. Around three quarters (70.3%) of the students responded that PMS disturbs normal routine. Getting plenty of sleep (75.2%), taking hot drinks (72.1%), and applying hot pack (59.5) were among the commonest ways of PMS self-management by students. The data demonstrated no statistically significant association between students' knowledge score and their stage of study, family history of PMS, regularity of menstruation, experiencing PMS, and knowing about PMS.

Conclusion: A considerable number of students obtained good knowledge score about PMS, however, their actual knowledge of PMS experience might be different from what they perceive as PMS. The majority of students hold a positive stance regarding PMS issue. The study revealed that more than half of students reported lack of motivation and concentration due to PMS.

Keywords: Premenstrual syndrome; Knowledge; Attitude; Nursing students; Iraq.

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INTRODUCTION

Premenstrual disorders comprise a range of premenstrual symptoms from mild premenstrual syndrome (PMS) to premenstrual dysphoric disorder (PMDD) [1]. PMS is characterized by a wide range of physical, emotional, and behavioral changes, occurring prior to the menstruation phase of menstrual cycle and settling after the commencement of the menstrual period. Although the underlying mechanism of PMS is unclear, diet, stress, hormonal values, and lifestyle have been implicated. For PMS, known risk factors include thyroid dysfunction, hypoglycemia, hormonal imbalance, genetic factors, fluid retention, stress and psychological factors [2]. Symptoms generally related to PMS include physical and psychological symptoms such as abdominal bloating, breast swelling and tenderness, weight gain, nausea, headache, restlessness, irritability and anger [2].To diagnose PMS, the criteria of American College of Obstetricians and Gynecologists (ACOG) for PMS is usually used [3]. Based on a systematic review, it was found that the occurrence of premenstrual related symptoms is fairly high (98%) in Iran [4], and in nearly 5% of women the symptoms are severe enough to interfere with personal, social relationships or work, and in many cases requiring pharmacological treatment [5]. An individual's social relationships, productivity, school performance, and emotional well-being can all be affected by PMS [6]. In addition, in more severe form of PMS, female students' academic performance can be negatively influenced by PMDD symptoms [7]. The students quality of life can also be affected by PMS [8]. Several studies have shown that PMS had a negative impact on students' academic life, their concentration along with their social activities [11, 21, 31]. Acikgoz and colleagues reported that there was a statistically significant relationship between PMS and the risk of depression [9]. In Iraq generally and in its Kurdistan region particularly, few studies have been found investigating either menstrual disorder or PMS in different context [10, 11]. For instance, a study conducted in Iraq investigated menstrual disorders but not PMS [10] and another study conducted in Erbil city investigated PMS among school students but not university students [11]. To the best of the researcher's knowledge, no study has been previously conducted that assesses the existence of PMS among female university students with their knowledge and attitude, thus, this study aims to identify the frequency of female students experiencing PMS symptoms. The objectives of the current study are to identify the frequency of experiencing PMS symptoms among students, assess their knowledge and attitude towards PMS and identify their perception of whether PMS has an impact on daily living activities and academic life. It also identifies an association between students' knowledge and some selected variables.

METHODS

A quantitative cross-sectional study was applied to the current study. Female students studying at the College of Nursing/ Hawler Medical University (HMU) were invited to take part in a self-administered online survey. Female students who were studying nursing or midwifery invited to participate included in the study. First stage, married, and postgraduate students were excluded from the study. The reason behind excluding these students was that, for instance, first stage students might not be able to answer questions related to the impact of PMS on their academic life or married students might have different experience than unmarried students. The total number of female students including both nursing and midwifery students

(except first stage students) was about 520 students. The calculated sample size was 222 students considering 95% Confidence Level and 5% Margin of Error using Epi InfoTM software for windows (version 7.2). The survey link was open until the desired number of students responded to fill in the virtual questionnaire (i.e., from 7/11/2022 until 11/1/2023). Thus, 222 students participated in the current study. The students were recruited through the author sharing the survey link with student representatives and students. An online survey using Google form was conducted among female university students at College of Nursing/HMU. The survey questionnaire was self-administered and developed based on reviewing the literature and on experts' view. A number of experts in the field reviewed the questionnaire in order to check its content and it was amended based on their comments and suggestions. In addition, the survey link was pilot tested by sending it to a number of students to test the clarity of the content and the practicality of completing and submitting the questionnaire. It was concluded that respondents had no comments on the terminology used in the questionnaire and that the questionnaire could be completed in an appropriate time frame. The questionnaire was composed of several sections. The first section included socio-demographic questions such as age, weight, height, and residence area. In addition, it also included questions about the menstrual cycle such as regularity of menstruation, amount of blood flow, and presence of PMS among students. The second section was about PMS symptoms, which is composed of different PMS symptoms ranging from no experience to severe experience. The third section was about students' knowledge of PMS. To explore their knowledge, students had to identify whether the statements (eighteen statements) were true or false. The overall students' knowledge score was categorized into three groups: poor knowledge (score between 0-6), fair knowledge (score between 7-12), and good knowledge (score between 13-18) [11]. The fourth section was about students' attitude about PMS and the related questions were asked based mainly on a five-point ordinal scale (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, and strongly agree=5). The last section was about the impact of PMS on daily living activities and college life as well as students PMS self-management. To diagnose PMS, the criteria of ACOG is usually used and it includes that at least one of the affective and somatic symptoms is essential to be present in the five days before menses for at least three previous menstrual cycles in a row, diminish within four days after the onset of menstruation without relapse until after 13th day of the menstrual cycle, and must exist in the absence of any pharmacologic therapy, ingestion of hormone, or alcohol or drug use. Those who suffer from PMS must display identifiable impairments in social, academic, or work performance [3].
Survey participants were provided with an information letter including full details of the study objectives, data protection, and confidentiality. Participants' consent was indicated by participants reading the information letter on the introductory page of the survey and clicking through to the next page of the questionnaire survey. All information and participants' anonymity were kept confidential. Ethical approval was obtained from the Ethics and Scientific Committees of the College of Nursing-HMU (Approval number 12 on 19th June 2022).The data were analyzed through the application of the Statistical Package of Social Science (SPSS) (Version 25).

Descriptive statistics including frequency and percentages were used for categorical variables and mean and standard deviation for quantitative variables. Chi squared test and Fisher's Exact test were applied to identify the association between some selected variables with students' knowledge score.

RESULTS

The students' characteristics are shown in Table 1. The mean age (+Standard deviation) of the students was 20.77 (+1.876) years, their mean height was 160.84 cm and mean weight was 58.04 kg. The mean for the calculated BMI of students was 22.42kg/m2. Most of the students, about 44%, were fourth stage students followed by second stage (32.9%), and third stage (23.4%). More than half (63.1%) of the students lived inside the city and 66.7% of them were not lived in the dormitory. Regarding information on students' menstrual cycle, the majority of students (70.3%) had regular menstrual cycle with 86% of them having moderate amount of menstrual blood flow. Dysmenorrhea was present among 62.6% of the students and more than half (53.6%) of them responded that they experience PMS, and 34.7% responded that they do not experience PMS. Approximately, 12% of students responded that they do not know whether they are experiencing PMS or not. The PMS symptoms reported by students are shown in Table 2. Most of the students did not experience symptoms like swollen extremities (68%), fluid retention (66.2%), constipation (63.1%), weight gain (56.8%), palpitations (56.3%), dizziness or fainting (55%), insomnia (50.9%), and diarrhea (50.5%). Other physical and psychological symptoms such as breast tenderness, abdominal bloating, acne, restlessness, anxiety, irritability, mood swings were experienced either to a mild or moderate extent. Only, backpain was reported to be experienced severely by the students compared to other symptoms.

Table 1: Characteristics of the study participants (n = 222).

Characteristics	F.	(%)
Stage		
Second	73	(32.9)
Third	52	(23.4)
Fourth	97	(43.7)
Address		
Inside city	140	(63.1)
Outside city	82	(36.9)
Living in Dormitory		
No	148	(66.7)
Yes	74	(33.3)
Regularity of Menstruation		
Regular	156	(70.3)
Irregular	66	(29.7)
Amount of menstrual flow		
Scanty	11	(5)
Moderate	191	(86)
Heavy	20	(9)
Dysmenorrhea		
Absent	83	(37.4)
Present	139	(62.6)
Family history of PMS		
I don't know	108	(48.6)
No	65	(29.3)
Yes	49	(22.1)
Experience PMS		
I don't know	26	(11.7)
No	77	(34.7)
Yes	119	(53.6)
Quantitative data	**Mean (± SD)**	
Age (year)	20.77 (1.876)	
Height (cm)	160.84 (5.737)	
Weight (kg)	58.04 (13.244)	
Computed Body Mass Index	22.4262 (4.942)	

Table 2: Prevalence of PMS symptoms

PMS Symptoms	No experience		Mild		Moderate		Severe	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Anxiety	36	(16.2)	87	(39.2)	73	(32.9)	26	(11.7)
Irritability	42	(18.9)	85	(38.3)	64	(28.8)	31	(14)
Mood swings	31	(14)	60	(27)	75	(33.8)	56	(25.2)
Nervous tension	47	(21.2)	80	(36)	59	(26.6)	36	(16.2)
Feeling depressed	51	(23.0)	78	(35.1)	50	(22.5)	43	(19.4)
Crying	84	(37.8)	65	(29.3)	48	(21.6)	25	(11.3)
Forgetfulness	98	(44.1)	79	(35.6)	36	(16.2)	9	(4.1)
Confusion	102	(45.9)	71	(32)	35	(15.8)	14	(6.3)
Insomnia	113	(50.9)	66	(29.7)	29	(13.1)	14	(6.3)
Fluid retention	147	(66.2)	47	(21.2)	24	(10.8)	4	(1.8)
Weight gain	126	(56.7)	58	(26.1)	29	(13.1)	9	(4.1)
Swollen extremities	151	(68)	45	(20.3)	22	(9.9)	4	(1.8)
Breast tenderness	82	(36.9)	73	(32.9)	40	(18)	27	(12.2)
Abdominal bloating	68	(30.6)	56	(25.2)	74	(33.3)	24	(10.9)
Oily skin	68	(30.6)	77	(34.7)	55	(24.8)	22	(9.9)
Acne	29	(13.1)	74	(33.3)	91	(41)	28	(12.6)
Constipation	140	(63.1)	46	(20.7)	30	(13.5)	6	(2.7)
Diarrhea	112	(50.5)	58	(26.1)	41	(18.5)	11	(5)
Backache	29	(13.1)	56	(25.2)	59	(26.6)	78	(35.1)
Restlessness	43	(19.4)	84	(37.8)	65	(29.3)	30	(13.5)
Hot flashes	99	(44.6)	79	(35.6)	33	(14.9)	11	(5)
Bursts of energy	90	(40.5)	77	(34.7)	43	(19.4)	12	(5.4)
Feeling of wellbeing	105	(47.3)	91	(41)	20	(9)	6	(2.7)
Appetite increase	99	(44.6)	62	(27.9)	49	(22.1)	12	(5.4)
Headache	92	(41.4)	59	(26.6)	50	(22.5)	21	(9.5)
Fatigue	34	(15.3)	65	(29.3)	80	(36)	43	(19.4)
Dizziness or fainting	122	(55)	52	(23.4)	34	(15.3)	14	(6.3)
Palpitations	125	(56.3)	58	(26.1)	28	(12.6)	11	(5)

Regarding the onset of the symptoms, only 43.2% of students stated that their symptoms started a week before the period and 50.5% of the students stated that their symptoms started during the period (as illustrated in Fig. 1).

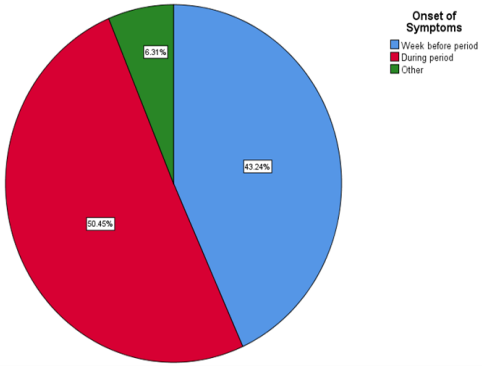

Figure 1: Onset of PMS symptoms

As shown in Table 3, getting plenty of sleep (75.2%), taking hot drinks (72.1%), and applying hot pack (59.5) were among the commonest ways of PMS self-management by students. The majority of students did not take traditional remedies (80.6%), exercise regularly (73%), eat a healthy, balanced diet (58.1%), and take painkillers (55.4%).

Table3: Students PMSself-management

PMS self-management	No		Yes	
	No.	(%)	No.	(%)
Exercise regularly	162	(73)	60	(27)
Eat a healthy, balanced diet	129	(58.1)	93	(41.9)
Get plenty of sleep	55	(24.8)	167	(75.2)
Taking hot drinks	62	(27.9)	160	(72.1)
Applying hot pack	90	(40.5)	132	(59.5)
Take painkillers	123	(55.4)	99	(44.6)
Traditional remedies	179	(80.6)	43	(19.4)
Do nothing	154	(69.4)	68	(30.6)
Other	148	(66.7)	74	(33.3)

Table 4 shows how PMS affects students' college life and daily routine. Around three quarters (70.3%) of the students responded that PMS disturbs normal routine. Although most of the students responded that they did not miss college (63.1%) and did not obtain low score (55%) due to PMS, most of them responded that they lacked motivation (67.1%) and concentration (62.2%).

Table 4: Impact of PMS on college life and normal routine

Impact of PMS	No		Yes	
	No.	(%)	No.	(%)
PMS disturbs normal routine	66	(29.7)	156	(70.3)
Missed college due to PMS	140	(63.1)	82	(36.9)
Missed social events due to PMS	103	(46.4)	119	(53.6)
Obtained low score due to PMS	122	(55)	100	(45)
Lack of motivation	73	(32.9)	149	(67.1)
Lack of concentration	84	(37.8)	138	(62.2)

The data illustrates that most of the students answered almost all of the knowledge questions correctly as more than half (52.3%) of students obtained good knowledge score, about 46% of students obtained fair knowledge score, and only 1.8% of students obtained poor knowledge score (as shown in Table 5).

Table 5: Students' knowledge score about PMS

Knowledge score	F.	(%)
Poor	4	(1.8)
Fair	102	(45.9)
Good	116	(52.3)
Total	**222**	**(100)**

Figure 2 depicts the attitude of students towards PMS. More than a quarter of the students strongly agreed that PMS leave should be an option at university. Also, 31.1% of students strongly agreed that PMS is a significant issue that needs to be discussed. Less than half (41%) of the students agreed that they feel comfortable talking to their family about PMS.

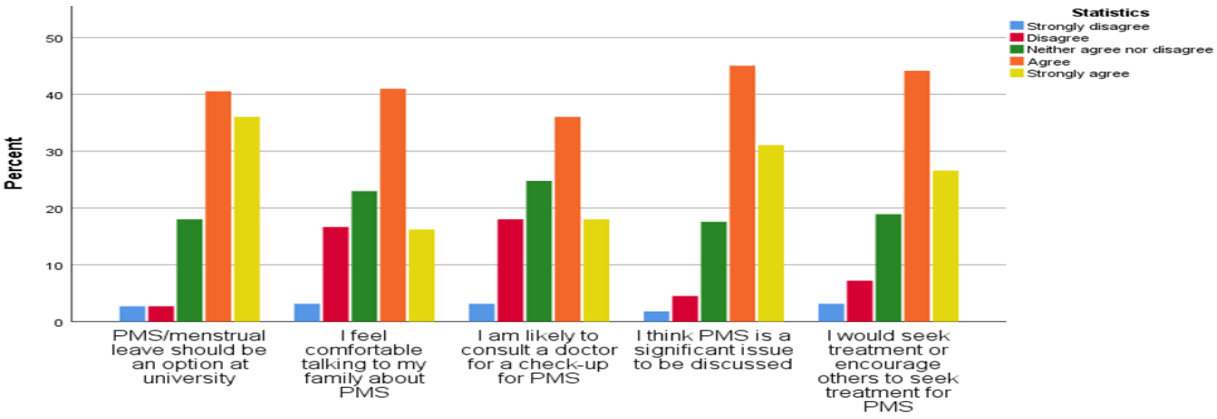

Figure 2: Students' attitude about PMS

The data demonstrates no statistically significant association between students' knowledge score and their stage of the study, family history of PMS, regularity of menstruation, experiencing PMS, and knowledge about PMS as their P values were greater than 0.05 significant level (see Table 6).

Table 6: Association between students' knowledge and some selected variables

Variables		Knowledge level (group)				P- value
		Poor No. (%)	Fair No. (%)	Good No. (%)	Total	
Stage of study	Second	2 (2.7)	31 (42.5)	40 (54.8)	73 (100)	0.348
	Third	0 (0)	29 (55.8)	23 (44.2)	52 (100)	
	Fourth	2 (2.1)	42 (43.3)	53 (54.6)	97 (100)	
	Total	4 (1.8)	102 (45.9)	116 (52.3)	222 (100)	
Family history of PMS	Don't know	1 (0.9)	54 (50)	53 (49.1)	108 (100)	0.130
	No	1 (1.5)	33 (50.8)	31 (47.7)	65 (100)	
	Yes	2 (4.1)	15 (30.6)	32 (65.3)	49 (100)	
	Total	4 (1.8)	102 (45.9)	116 (52.3)	222 (100)	
Regularity of menstruation	Regular	1 (0.6)	74 (47.5)	81 (51.9)	156 (100)	0.153
	Irregular	3 (4.6)	28 (42.4)	35 (53)	66 (100)	
	Total	4 (1.8)	102 (45.9)	116 (52.3)	222 (100)	
Experiencing PMS	Don't know	1 (3.8)	11 (42.4)	14 (53.8)	26 (100)	0.953
	No	1 (1.3)	36 (46.8)	40 (51.9)	77 (100)	
	Yes	2 (1.7)	55 (46.2)	62 (52.1)	119 (100)	
	Total	4 (1.8)	102 (45.9)	116 (52.3)	222 (100)	
Do you know about PMS?	Don't know	0 (0)	6 (37.5)	10 (62.5)	16 (100)	0.372
	No	1 (2.2)	26 (57.8)	18 (40)	45 (100)	
	Yes	3 (1.9)	70 (43.5)	88 (54.6)	161 (100)	
	Total	4 (1.8)	102 (45.9)	116 (52.3)	222 (100)	

DISCUSSION

The current study reveals the presence of PMS among female college students, their knowledge and attitude towards PMS, and the impact of PMS on academic and college life. The present study highlighted that the majority of students obtained good knowledge score about PMS. Likewise, another study reported that the majority (80%) of students were knowledgeable about PMS [12]. In contrast with the current findings, a study [13] reported that only 3.6% of participants had good knowledge about PMS. This might be due to the fact that the study participants were not students in the medical field as students studying different medical fields might be more knowledgeable about PMS.

Regarding students' attitude towards PMS, the majority of students in the present study strongly agreed that PMS is a significant issue that needs to be discussed. Similar finding was reported by another study [12], in which it was reported that 90% of students hold the same stance. In addition, another study [14] reported that 77.5% of students hold the similar viewpoint. Furthermore, the majority of the students in the current study agreed/strongly agreed that PMS leave should be an option at the university. This is in accordance with another study [12] in which 81.5% of students believed that PMS leave should be an option. Another study [14] also reported that 61.6% of students believed the same. PMS symptoms occur during the luteal phase of the menstrual cycle and they will be diminished with the start of menstruation [15]. In the current study, a remarkable number of students (54%) perceived that they experienced PMS. However, when students were asked to identify the onset of PMS symptoms, most of them mentioned that they had the symptoms during the menstrual period. This suggests that there might be some discrepancies between the student's actual knowledge of PMS and what they perceive to be PMS. This is indeed have been shown in a study [14] where they found that 79.5% of students stated that they experience PMS, however, when they were evaluated based on the criteria for the PMS diagnosis, they revealed that only 23.9% of students actually experience PMS. They concluded that there is a great inconsistency between having actual PMS and self-perceived PMS. Studies have shown different prevalence of PMS, for instance, it was reported that 81.6% of college students experienced no or mild PMS in India [16]. In Pakistan [17], it was reported that the prevalence of PMS was 26.5% among nursing students. A study [18] in Turkey identified PMS symptoms in 36.4% of students. In a systematic review and meta-analysis study conducted on 25 studies [19], it was found that the pooled prevalence of PMS was 43% indicating high PMS prevalence in India. In other systematic review and meta-analysis studies, the prevalence of PMS was around 48% and 71% [4, 20]. In Saudi Arabia, the PMS prevalence was reported to be about 65% [21]. Other studies reported 31.1% and 84.5% PMS prevalence among students [22, 23]. The current findings revealed that backpain, breast tenderness, abdominal bloating, acne, restlessness, anxiety, and irritability were the most common symptoms reported to be experienced by the students. Similarly, in a study conducted in Jordan on 594 medical students, it was found that the majority of students experienced breast tenderness, bloating, nervousness, anxiety and mood swings to a moderate level [24]. Likewise, other studies found that breast tenderness, abdominal bloating and headache were the most common symptoms reported by students [25, 26]. Other studies reported other symptoms,

for instance, a study [16] reported that fatigue or lack of energy was the most common reported symptoms. Another study also reported that muscle pain and lack of energy were the most prevalent symptoms followed by abdominal pain, headache, and irritability [27]. In addition, mood changes, depressed mood, and fatigue were also reported by participants in other studies [6, 28].Regarding students' PMS self-management, around 60% and 27% of students in the current study apply hot back and exercise regularly to relieve their PMS symptoms, respectively. This is in agreement with another study which reported that 56.2% and 26.9% of students use hot pack and do exercise to alleviate their discomfort [12]. The current findings also highlighted that 55.4% of students did not take any medications such as painkillers to alleviate their symptoms. Similarly, another study conducted among Pakistani women reported a higher figure (81.3%) of females who did not take any medications [27]. In addition, the present study found that only 19.4% of students used traditional remedy to relieve their PMS symptoms. However, higher figure was reported in a study conducted in Lebanon [25], in which around 49% of medical students applied some kind of remedies to alleviate their PMS symptoms. However, a study found that 49.4% of students do nothing, this figure is a bit higher compared to the current study findings where 30.6% of students did nothing. The female students' academic performance and university related duties might be undesirably affected by PMS [24]. Regarding the impact of PMS on daily life activities and college life, the current findings revealed that 82.2% of students reported the lack of motivation. Similarly, around 77% of students' school work productivity was impaired due to PMS [16]. In addition, another study also reported that almost 73% of students' daily activities were affected due to the pain. Furthermore, another study concluded that PMS has a significant negative impact on students' performance academically and their emotional well-being [29]. It was also concluded that a substantial number of students felt that PMS impaired their daily living and social activities [30]. It was reported that 53.8% of students stated that PMS impaired their college work and concentration [12]. Other studies have documented that the severity of symptoms of PMS hinders daily routine activities and has a substantial consequence on the academic participation of female university students. In addition, 49.2% of them reported that PMS impaired their social activities compared to 53.6% of students who reported that they missed social events due to PMS in the current study [21, 31]. Although the current study highlighted substantial findings regarding PMS among female university students, it is not without limitations. As the current study included only nursing and midwifery students, the outcomes of the study might not be generalizable to other students studying other medical and non-medical specialties. Henceforth, conducting other studies exploring the issue among other students studying medical and non-medical specialties is deemed necessary.

CONCLUSION

A considerable number of students obtained good knowledge score about PMS, however, their actual knowledge about PMS experience might differ from what they perceive as PMS. The majority of students hold a positive stance regarding the PMS issue. The study revealed that the majority of students reported the lack of motivation and concentration due to PMS. Further studies exploring the PMS among other students studying medical

and non-medical specialties are considered essential.

CONFLICT OF INTEREST

The author reports no conflict of interest.

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