

Premenstrual Related Symptoms among Women Attending Primary Health Care Centers During 2022

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Abstract

Background: A large number of reproductive age women experience at least some form of menstrual symptoms. Premenstrual syndrome is characterized by physical, affective, and behavioral symptoms that significantly impair the daily lives of women, including work and personal activities during the luteal phase and spontaneously resolve within a few days of the onset of menstruation.

Objectives: To assess premenstrual symptoms (physical, psychological, behavioral) among a sample of women attending primary healthcare centers during 2022 in Baghdad. And to find out if there is any association between premenstrual symptoms and certain variables: (socioeconomic status, education, occupation, marital status, number of children, menstrual history, and family history of premenstrual symptoms).

Method: A cross-sectional study was conducted among 400 female at reproductive age (15-49 years) who were attending primary health care centers in Baghdad (Al-Karkh and Al-Russafa health directorates) for six months duration. Structured questionnaire that derived from previous studies was used. Chi square test was used for data analysis by using SPSS version 24.

Results: More than half of study participants (52.8%) were between 15 - 25 years. Females with intermediate socioeconomic status (6-10) were formed 243 (61%). According to the anxiety score; 183 (46%) of included females had abnormal score. According to depression score; 201 (51%) of the participants had abnormal scores. Sleeping disturbance occurred in 77% of the participants, insomnia in 57.8%, and hypersomnia in 57%. About 68.3% face difficulty in concentration, forgetfulness. 92.5% feel joint or muscle pain, 83.5% feel breast tenderness or swelling. 67.8% feel sensation of weight gain. Headache and dizziness occurred in 75.3%, 70% of participants respectively. Feeling lethargy, easy fatigability was common in 95.8% of participants. 97.3% of participants have abdominal pain and cramps, 94.8 have backache, 76.8% have acne flare up, nausea and vomiting occurred in 51.3%, hot flashes in 74.85, palpitation in 64.2%.

Conclusions: Younger females were significantly more anxious during the premenstrual periods, and females with intermediate socioeconomic status were significantly associated with an abnormal anxiety score. Lower educational level was significantly associated with abnormal depression scores. There was no significant association between depression score and socioeconomic status.

Keywords: Premenstrual symptoms Women, Premenstrual syndrom

Introduction

About 80%-90% of females have at least a single Premenstrual syndrome (PMS) symptom, and in approximately 2.5% -3% of them, PMS symptoms increase in severity to impact their function and social life.⁽¹⁾ The most common category affected by the symptoms of PMS are female university students. The following are examples of prevalence of PMS among university students of different nations: about 40% in Taiwan, 56% in Egypt, and approximately 72-91% in Turkey^(2- 4). The differences in the prevalence of PMS could be due to different genetic factors, diet, and lifestyles and also may be due to different community-adopted practices that precedes or occur during menses^(5- 7).

When premenstrual symptoms increase in severity and are accompanied by an impairment of function (occupational or on the level of interpersonal relationships) it is likely that women suffer from Premenstrual Syndrome (PMS) or the more severe Premenstrual Dysphoric Disorder (PMDD), that would be diagnosed using the criteria of the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5)⁽⁸⁾.

Premenstrual syndrome (PMS) encompasses clinically significant somatic and psychological manifestations during the luteal phase of the menstrual cycle, leading to substantial distress and impairment in functional capacity. These symptoms disappear within a few days of the onset of menstruation. Symptoms of PMS include changes in

appetite, weight gain, abdominal pain, back pain, low back pain, headache, swelling and tenderness of the breasts, nausea, constipation, anxiety, irritability, anger, fatigue, restlessness, mood swings and crying⁽⁹⁾.

Etiology of PMS

Currently there are two theories postulated for the etiology of PMS. Both involve the ovarian hormone cycle. The theories are:

1. Some women are particularly sensitive to progesterone and progestogens, as serum estrogen or progesterone are the same in those with or without PMS.
2. The second theory is that estrogen and progesterone reduce serotonin levels, a chemical neurotransmitter known to regulate mood. This theory is proven by selective serotonin reuptake inhibitors (SSRIs) reducing PMS symptoms by increasing serotonin levels. Low serotonin levels are also associated with depression and anxiety.

The concept that PMS is caused by the ovarian cycle is supported by the fact that PMS is absent prior to puberty, during pregnancy, after the menopause, and during treatment with gonadotrophin-releasing hormone analogues⁽¹⁰⁾

Risk factors

The factors or predictors that increase the likelihood of having premenstrual symptoms were: chronic diseases, gynecological diseases within the past year, painful and/or irregular menstruation and other menstrual disorders, an increased duration of periods, increased number of pads used, no history of sexual intercourse, an early age of onset of menarche, nulliparity, using contraception methods, alcohol consumption and tobacco consumption. While psychological factors include: a past history of psychiatric treatment, a family history of premenstrual syndrome, negative thoughts about menstruation, perceived stress, neuroticism and coping strategies (negative cognitive styles).⁽¹¹⁻¹⁴⁾

Physical, Psychological and Behavioral Symptoms

- Physical symptoms include:

abdominal bloating, body aches, breast tenderness and/or fullness, cramps, abdominal pain, fatigue, headache, nausea, swelling of extremities, and weight gain.

- Psychological and behavioral symptoms include:

Anger, irritability, anxiety, change in appetite (overeating or food cravings), change in libido, decreased concentration, depressed mood, feeling out of control, mood swings, poor sleep or increased need for sleep, tension, withdrawal from usual activities^(8, 15) The duration of affective symptoms can vary from a few days to 2 weeks. Symptoms usually become worse a week before and reach a

peak two days before the beginning of menstruation⁽¹⁶⁾.

Management of PMS

Regarding the management of premenstrual symptoms, a benefit was observed using a combination of pharmacological agents (like non-steroidal anti-inflammatory drugs, Selective Serotonin Reuptake Inhibitors (SSRIs), anxiolytics, GnRH agonists, spironolactone, and oral contraceptives) along with nonpharmacological treatments, mostly behavioral and cognitive psychotherapies, light therapy, exercise, massage therapy, as well as special dietary changes⁽¹⁷⁾.

Regarding PMS with mainly emotional pattern of symptoms, SSRIs are regarded as a first-line of management,⁽¹⁸⁾ such as fluoxetine, sertraline, paroxetine, and escitalopram⁽¹⁹⁾.

Objectives:

- To assess premenstrual symptoms (physical, psychological, behavioral) among a sample of women attending primary health care centers in Baghdad during 2022.
- To find out if there is any association between premenstrual symptoms and certain variables: (socioeconomic status, education, occupation, marital status, number of children, menstrual history, and family history of premenstrual symptoms).

Methodology:

A cross-sectional study was conducted among a convenient sample of 400 females at their reproductive age (15-49 years old) attending primary health care centers in Baghdad (three centers in Al-Karkh And three centers in Al-Russafa Health Directorates) for the period extended from the 1st of march 2022 to the 30 of June 2022. The centers were selected by non-random method based on the availability of convenient sample. Sample size from each center was 66 female from each center in Alrussafa and 67 female from each center in alkarkh

Inclusion criteria:

All menstruating females aged from 15 to 49 years.

Exclusion criteria:

- Any menopausal women was excluded from the study whatever the cause (women with hysterectomy with bilateral -oophorectomy).
- Pregnant and lactating women.
- Women on hormonal birth control methods
- Woman with secondary amenorrhea.
- Women on treatment of PMS.
- Women with psychological problems (anxiety and depression).

The data were collected by direct interview by the researcher; it took about 15 minutes to fill the questionnaire. A structured questionnaire that was derived from previous literatures was used. ⁽²⁰⁻²³⁾ The questionnaire was structured by the researcher and ensured its validity by a panel of expert from family and community department.

The questionnaire used for data collection consisted of:

- Sociodemographic data (age, education, occupation, marital status, number of children, smoking history, menstrual history, family history of PMS/PMDD, house ownership, and car ownership).
- Psychological symptoms (will be validated by hospital anxiety and depression scale "HADS")
Total score:
0-7 =normal
8-10=borderline abnormal (borderline case)
11-21=abnormal (case)
- Behavioral symptoms (sleeping disturbance, family member suffer from anxiety , social withdrawal, difficulty in concentration, change in appetite, libido change, aggressiveness, take sick leave, work with less efficiency, embarrassment during cycle, seek medical advice)
- Physical symptoms (breast tenderness, joint or muscle pain, sensation of bloating, sensation of weight gain, headache, dizziness, lethargy ,abdominal pain, backache, acne flare up, swelling of hand and feet, nausea and vomiting, constipation, diarrhea, hot flashes, palpitation).

The participation in the study was optional. The objectives of the study were explained to the females by the researcher. A verbal consent was taken from all the females who decided to participate in the study. The participants were taken in a friendly atmosphere to a private, comfortable place in the PHCC. All the participants were given a complete unconditioned choice to participate in the study. They were allowed to leave at any time they feel

uncomfortable. None of the participants were interviewed in front of others including their relatives; thus, a complete confidentiality was ensured. The participants were informed that all the collected data will be used for research purpose only, and personal information will be collected with serial identification numbers without an identity.

Analysis of the data was done using SPSS (Statistical Package for Social Sciences) version 24. Categorical data were presented as number and percentages. The significant of difference of different percentages (qualitative data) were tested using Pearson chi –square test with application of Fisher exact test whenever applicable. P-value < 0.05 was considered significant.

For calculating of socioeconomic index for health research in Iraq:

The equation used was:

$SES = Education + Occupation + House\ ownership * 0.5 + Car\ ownership * 0.1 + (age-20)/100 - Retired/unemployed/ deceased^{(23)}$.

For Socioeconomic Status score:

Less than 6 = low

6-10 = intermediate

More than 10 = high

Results

The study included 400 females, more than half of them (52.8%) were aged 15-25 years. Housewives were forming 64.5%. Regarding the marital status, 64.5% were singles and 33.3% were married as presented in table 1.

The distribution of occupation shows that 88 (22.0%) had semiskilled manual occupation, 80 (20%) had skilled manual and non-manual occupation, and (78, 19.5%) had associated professional occupation.

Distribution of socioeconomic index revealed that 243 (61%) had intermediate index (6-10), 102 (26%) had low score (less than 6) and the remaining 55 (14%) had high score (more than 10), as shown in figure 1.

Table (1): Demographic characteristics of study sample (n=400)			
Variable		N.	%
Age group	15 - 25 years	211	52.8
	26 - 35 years	162	40.5
	36 - 49 years	27	6.8
Education	Illiterate	11	2.8
	Primary school (or can read and write)	29	7.3
	Intermediate school	55	13.8
	High school or vocational	119	29.8
	Diploma (institute)	52	13.0
	Bachelor's degree (college)	114	28.5
	Master's degree, higher diploma or equivalent, PhD	20	5.0
Occupational status	Housewife	258	64.5
	Employed	39	9.8
	Unemployed	29	7.2
	Student	74	18.5
Marital status	Single	258	64.5
	Married	133	33.3
	Widow & Divorced	9	2.3
Parity (Total=142)	No children	30	21.1
	1-2	47	33.1
	3-4	63	44.4
	>5	1	0.7
House ownership	Yes	187	46.8
	No	213	53.3
Car ownership	Yes	325	81.3
	No	75	18.8

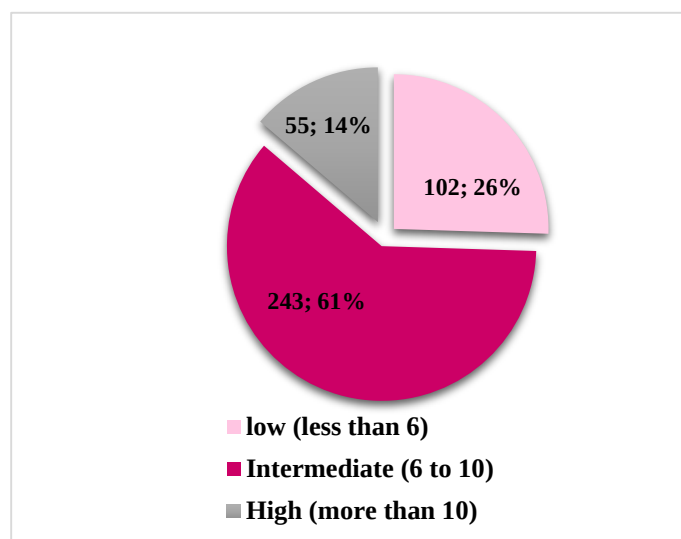


Figure (1): Distribution of socioeconomic index among study sample.

The Clinical characteristics of the study sample revealed that 57.8% of females had a family history of PMS or PMDD. The age of menarche was < 15 years in 86.5%. The duration of period was 3-6 days in 64% of participant females and 7 days in 26%

of them. Nearly less than two third of them (70%) had regular cycles. The Menstrual cycle Length was 21–25 days in 69.5% of study sample, as shown in table 2.

Table (2): Clinical characteristics of study sample (n=400)			
Variable		N.	%
Family history of PMS/PMDD	Yes	231	57.8
	No	169	42.3
Age when menstrual cycle Started (menarche)	< 15 years	346	86.5
	15-16 years	54	13.5
Duration of period	1-2 days	40	10.0
	3-6 days	256	64.0
	=or>7 days	104	26.0
Menstrual cycle pattern	Regular	280	70.0
	Irregular	120	30.0
Menstrual cycle Length	< 21 days	90	22.5
	21 – 25 days	278	69.5
	> 25 days	32	8.0

The answers of anxiety showed that 36.5% felt most of the time of being tense or wound up and 34.3% felt that a lot of times. Regarding " got a sort of frightened feeling as if something awful is about to happen" was presented a little without worrying in 29.5% of participant and didn't present at all in 28% of them. "Worrying thoughts" was found from time to time but not often in 34.3% of females. "The ability of sitting at ease and feel relaxed" was not found often in 54.3% of females. "Presence of frightened feeling like 'butterflies' in the stomach"

was very often in 31% and occasionally presented in 28.8% of the females. "The feeling of restless" was not found at all in 34% and presented but not very much in 30.8%. "Sudden feelings of panic" was not found at all in 40.8% and presented but not very much in 29.0%, as presented in table 3.

According to anxiety score, 183(46%) of included females were abnormal, 125 (31%) had borderline anxiety and 92 (23%) had normal score, as presented in figure2.

Table (3): Distribution of anxiety related answers among study participants (n=400)			
I feel tense or 'wound up	Not at all	12	3.0%
	From time to time, occasionally	105	26.3%
	A lot of the time	137	34.3%
	Most of the time	146	36.5%
I get a sort of frightened feeling as if something awful is about to happen	Not at all	112	28.0%
	A little, but it doesn't worry me	118	29.5%
	Yes, but not too badly	108	27.0%
	Very definitely and quite badly	62	15.5%
Worrying thoughts go through my mind	Only occasionally	49	12.3%
	From time to time, but not too often	137	34.3%
	A lot of the time	126	31.5%
	A great deal of the time	88	22.0%
I can sit at ease and feel relaxed	Definitely	10	2.5%
	Usually,	60	15%
	Not Often	217	54.3%
	Not at all	111	27.8%
I get a sort of frightened feeling like 'butterflies' in the stomach	Not at all	78	19.5%
	Occasionally	115	28.8%
	Quite Often	83	20.8%
	Very Often	124	31.0%
I feel restless as I have to be on the move	Not at all	136	34.0%
	Not very much	123	30.8%
	Quite a lot	70	17.5%
	Very much indeed	71	17.8%
I get sudden feelings of panic	Not at all	163	40.8%
	Not very often	116	29.0%
	Quite often	59	14.8%
	Very often indeed	62	15.5%

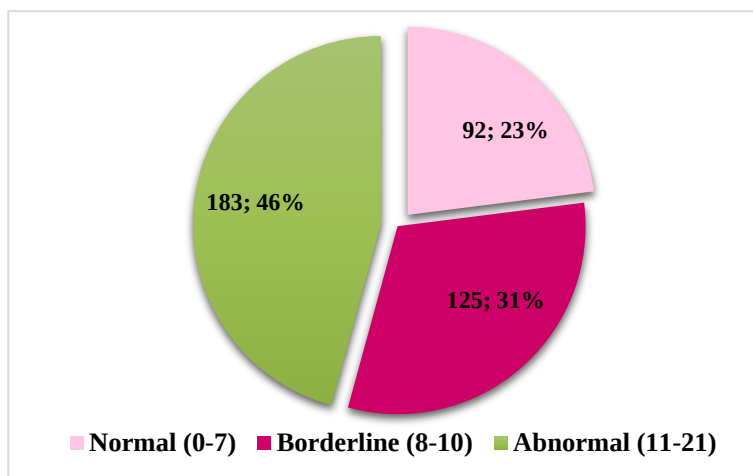


Figure (2): Distribution of anxiety score among study sample.

The statements that evaluate depression result revealed that, "enjoyment the things as usual" was only a little in 35%, "ability to laugh and see funny sides" was definitely not so much now in 35% of included females. "Feeling cheerful" wasn't at all time in 43.5%. "Felt slowed down" was presented sometimes in 46.3% of participant. "Lost interest in the appearance" may not take quite as much care in 41.5% of females. "Look forward with enjoyment to

things" occurred hardly at all in 50% of participant. "The ability of enjoyment a good book or radio or TV program" was not often in 33.0% of participant, as presented in table 4.

According to depression score, 202 (51%) of participant had abnormal score (11-21), 100 (25%) had borderline score (8-10) and 98 (24%) had normal score (0-7), as presented in figure 3.

Table (4): Distribution of depression related responses among study participants (n=400)			
Variable		N.	%
I still enjoy the things I used to enjoy	Definitely as much	44	11.0
	A lot of the time	139	34.8
	Only a little	140	35.0
	Hardly at all	77	19.3
I can laugh and see the funny side of things	As much as I always could	77	19.3
	Not quite so much now	116	29.0
	Definitely not so much now	141	35.3
	Not at all	66	16.5
I feel cheerful	Most of the time	15	3.8
	Sometimes	83	20.7
	Not often	128	32.0
	Not at all	174	43.5
I feel as if I am slowed down	Not at all	54	13.5
	Sometimes	185	46.3
	Very often	76	19.0
	Nearly all the time	85	21.3
I have lost interest in my appearance	I take just as much care as ever	90	22.5
	I may not take quite as much care	166	41.5
	I don't take as much care as I should	69	17.3
	Definitely	75	18.8
I look forward with enjoyment to things	As much as I ever did	38	9.5
	Rather less than I used to	19	4.75
	Definitely less than I used to	143	35.8
	Hardly at all	200	50
I can enjoy a good book or radio or TV program	Often	62	15.5
	Sometimes	75	18.8
	Not often	132	33.0
	Very seldom	131	32.8

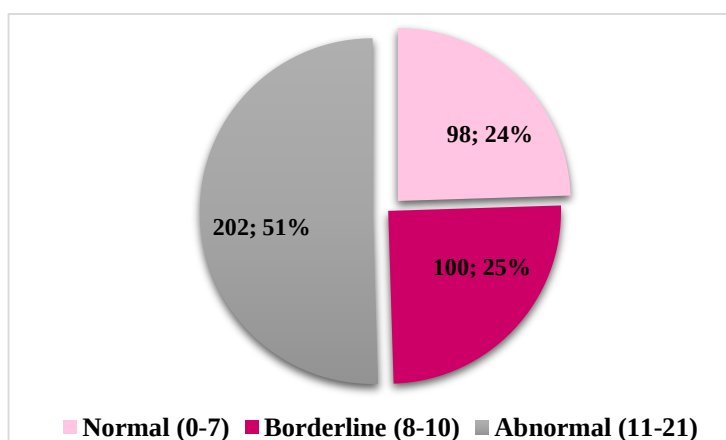


Figure (3): Distribution of Depression score among study sample.

The distribution of behavioral characteristics among participant showed that, sleeping disturbance was found in 77% of participant, insomnia in 57.8 %, and hypersomnia found in 57%. Family members suffer from anxiety was reported positively in 48% of the participants, 69% had social withdrawal, and 68.3% were facing difficulty in concentration, forgetfulness.

Change in appetite occurred in 87.8% of participant, 81.5% had craving for sweet food and 45.3% had craving for salty food. 48.1% had libido change. Feelings of being aggressive occur in 65%, 32.0% of participant usually took sick leave, 83.8% work less efficiently. 45.8% feel embarrassed and 54.0% seek for medical advice, as presented in table 5.

Table (5): Distribution of behavioral characteristics among study participants (n=400)

Variables	No		Rarely		Yes	
	N.	%	N.	%	N.	%
I feel sleeping disturbance	51	12.8	41	10.3	308	77.0
Insomnia	126	31.5	43	10.8	231	57.8
Hypersomnia	132	33.0	40	10.0	228	57.0
My family members suffer from my anxiety	179	44.8	29	7.3	192	48.0
I experience social withdrawal	86	21.5	38	9.5	276	69.0
I face difficulty in concertation, forgetfulness	82	20.5	45	11.3	273	68.3
I suffer from change in appetite	30	7.5	19	4.8	351	87.8
Craving for sweet food	55	13.8	19	4.8	326	81.5
Craving for salty food	149	37.3	70	17.5	181	45.3
I feel Aggressive	94	23.5	46	11.5	260	65.0
I usually take sick leave	222	55.6	50	12.5	128	32.0
I work with less efficiency	31	7.8	34	8.5	335	83.8
I feel embarrassed	181	45.3	36	9.0	183	45.8
I seek medical advice	135	33.8	49	12.3	216	54.0
I suffer from libido change (This item was asked for only married participants, n.=133)	32	24.0	37	27.8	64	48.1

Regarding the physical characteristics, 83.5% of participant had breast tenderness or swelling, 92.5% felt joints or muscle pain, 87.5% had sensation of bloating, 67.8% had sensation of weight gain. Headache and dizziness occurred in 75.3% and 70% in participant, respectively. Feeling lethargy and easy

fatigability was common in 95.8%. Abdominal pain and cramps experienced by 97.3% of participant, backache in 94.8%, flare up of acne in 76.8%, nausea and vomiting in 51.3%, hot flashes in 74.8% and palpitation in 64.2%, as presented in table 6.

Table (6): Distribution of physical characteristics among study participants (n=400)						
Variables	No		Rarely		Yes	
	N.	%	N.	N.	%	N.
I feel breast Tenderness or swelling	43	10.8	23	5.8	334	83.5
I feel joints or muscle pain	16	4.0	14	3.5	370	92.5
I feel sensation of bloating	33	8.3	17	4.3	350	87.5
I feel sensation of weight gain	106	26.5	23	5.8	271	67.8
I have headache	56	14.0	43	10.8	301	75.3
I have dizziness	76	19.0	44	11.0	280	70.0
I feel lethargy, easy fatigability	5	1.3	12	3.0	383	95.8
I have abdominal pain and cramps	4	1.0	7	1.8	389	97.3
I have backache	10	2.5	11	2.8	379	94.8
I have acne- flare up	48	12.0	45	11.3	307	76.8
I feel swelling of hand and feet	217	54.3	53	13.3	130	32.5
I have nausea, Vomiting	125	31.3	70	17.5	205	51.3
I have constipation	190	47.5	57	14.3	153	38.3
I have diarrhea	158	39.5	50	12.5	192	48.0
I feel hot flashes	60	15.0	41	10.3	299	74.8
I feel palpitation	104	26.1	39	9.8	256	64.2

The relation between anxiety score and demographic data was not significant regarding educational level, occupation, marital status and children number. However, younger age group of

participants (15 - 25 years) had significant association with abnormal score, and older aged (36 - 49 years) had association with normal score, p-value 0.004, as presented in table 7.

Table (7): Anxiety score in relation to demographic characteristics of study sample (n=400)								
Variables		Anxiety score						P- value
		Normal (0-7)		Borderline (8-10)		Abnormal (11-21)		
		N.	%	N.	%	N.	%	
Age group	15 - 25 years	38	18.0	61	28.9	112	53.1	0.004
	26 - 35 years	42	25.9	57	35.2	63	38.9	
	36 - 49 years	12	44.4	7	25.9	8	29.6	
Education	Illiterate	3	27.3	4	36.4	4	36.4	0.457
	Primary school	10	34.5	5	17.2	14	48.3	
	Intermediate school	13	23.6	20	36.4	22	40.0	
	High school or vocational	26	21.8	30	25.2	63	52.9	
	Diploma (institute)	13	25.0	17	32.7	22	42.3	
	Bachelor's degree	20	17.5	44	38.6	50	43.9	
	Master's degree, higher diploma	2	25.0	2	25.0	4	50.0	
	PhD or equivalent	5	41.7	3	25.0	4	33.3	
Occupation	Housewife	64	24.8	81	31.4	113	43.8	0.574
	Employed	8	20.5	17	43.6	14	35.9	
	Unemployed	6	20.7	7	24.1	16	55.2	
	Student	14	18.9	20	27.0	40	54.1	

Marital status	Single	58	22.5	72	27.9	128	49.6	0.178
	Married	34	25.6	48	36.1	51	38.3	
	Widow & Divorced	0	0.0	5	55.6	4	44.4	
Parity	None	65	22.5	82	28.4	142	49.1	0.078
	1-2	8	17.0	18	38.3	21	44.7	
	3-4	18	28.6	25	39.7	20	31.7	
	> 5	1	100.0	0	0.0	0	0.0	

The relation between anxiety score and clinical characteristics was not significant regarding age of menarche, duration of period, menstrual cycle pattern and menstrual cycle length. Those with

family history of PMS had significant association with abnormal score, p-value 0.002, as presented in table 8.

Table (8): Anxiety score in relation to clinical characteristics of study sample (n=400)

Variables		Anxiety score						P- value
		Normal (0-7)		Borderline (8-10)		Abnormal (11-21)		
		N.	%	N.	%	N.	%	
Family history of PMS	Yes	39	16.9	74	32.0	118	51.1	0.002
	No	53	31.4	51	30.2	65	38.5	
Age of menarche	<15 years	76	22.0	107	30.9	163	47.1	0.314
	15-16years	16	29.6	18	33.3	20	37.0	
Duration of period	1-2 days	7	17.5	14	35.0	19	47.5	0.743
	3-6 days	58	22.7	83	32.4	115	44.9	
	=or>7 days	27	26.0	28	26.9	49	47.1	
Menstrual cycle pattern	Regular	72	25.7	89	31.8	119	42.5	0.073
	Irregular	20	16.7	36	30.0	64	53.3	
Menstrual cycle Length	< 21 days	22	24.4	19	21.1	49	54.4	0.167
	21-25 days	61	21.9	96	34.5	121	43.5	
	> 25 days	9	28.1	10	31.3	13	40.6	

The relation between depression score and demographic data was not significant regarding age group, occupation, marital status and parity. However, those with low education level (Illiterate or

Primary school) had significant association with abnormal score, p-value 0.017, as presented in table 9.

Table (9): Depression score in relation to demographic characteristics of study sample (n=400)

Variables		Depression score						P-value
		Normal (0-7)		Borderline (8-10)		Abnormal (11-21)		
		N.	%	N.	%	N.	%	
Age group	15 - 25 years	50	23.7	42	19.9	119	56.4	0.080
	26 - 35 years	40	24.7	51	31.5	71	43.8	
	36 - 49 years	8	29.6	7	25.9	12	44.4	
Education	Illiterate	2	18.2	3	27.3	6	54.5	0.017
	Primary school	6	20.7	3	10.3	20	69.0	
	Intermediate school	17	30.9	12	21.8	26	47.3	
	High school or vocational	30	25.2	23	19.3	66	55.5	
	Diploma (institute)	13	25.0	15	28.8	24	46.2	
	Bachelor's degree	19	16.7	40	35.1	55	48.2	
	Master's degree, higher diploma	5	62.5	1	12.5	2	25.0	
	PhD or equivalent	6	50.0	3	25.0	3	25.0	
Occupation	Housewife	69	26.7	67	26.0	122	47.3	0.208
	Employed	6	15.4	10	25.6	23	59.0	
	Unemployed	3	10.3	11	37.9	15	51.8	
	Student	20	27.0	12	16.2	42	56.8	
Marital status	Married	31	23.3	38	28.6	64	48.1	0.648
	Single	64	24.8	59	22.9	135	52.3	
	Widow & Divorced	3	33.3	3	33.3	3	33.3	
Parity	None	72	24.9	69	23.9	148	51.2	0.379
	1-2	14	29.8	11	23.4	22	46.8	
	3-4	11	17.5	20	31.7	32	50.8	
	> 5	1	100.0	0	0.0	0	0.0	

The relation between depression score and clinical characteristics was not significant regarding family history of PMS, duration of period, menstrual cycle pattern and menstrual cycle length. Females

with menarche < 15 years had significant association with abnormal score, p-value 0.017, as presented in table 10.

Table (10): Depression score in relation to clinical characteristics of study sample (n=400)								
Variables		Depression score						P- value
		Normal (0-7)		Borderline (8-10)		Abnormal (11-21)		
		N.	%	N.	%	N.	%	
Family history of PMS	Yes	50	21.6	54	23.4	127	55.0	0.080
	No	48	28.4	46	27.2	75	44.4	
Age of menarche	< 15 years	85	24.6	85	24.6	176	50.9	0.017
	15-16 years	13	24.1	15	27.8	26	48.1	
Duration of period	1-2 days	10	25.0	8	20.0	22	55.0	0.208
	3-6 days	58	22.7	66	25.8	132	51.6	
	=or >7 days	30	28.8	26	25.0	48	46.2	
Menstrual cycle pattern	Regular	69	24.6	71	25.4	140	50.0	0.648
	Irregular	29	24.2	29	24.2	62	51.7	
Menstrual cycle Length	< 21 days	23	25.6	19	21.1	48	53.3	0.379
	21 – 25 days	65	23.4	73	26.3	140	50.4	
	> 25 days	10	31.3	8	25.0	14	43.8	

The relation between socioeconomic index with anxiety and depression scores revealed that, there is a significant association between SE index 6-

10 and abnormal anxiety score, p-value 0.012, as presented in table 11.

Table (11): Anxiety and depression scores in relation to socioeconomic status among study sample (n=400)								
HADS scores		SE index						P- value
		low < 6 (n=102)		intermediate 6 – 10 (n=243)		High > 10 (n=55)		
		N.	%	N.	%	N.	%	
Anxiety Score	Normal (0-7)	32	31.4	46	18.9	14	25.5	0.012
	Borderline (8-10)	28	27.5	73	30.0	24	43.6	
	Abnormal(11-21)	42	41.2	124	51.0	17	30.9	
Depression Score	Normal (0-7)	31	30.4	52	21.4	15	27.3	0.107
	Borderline (8-10)	17	16.7	66	27.2	17	30.9	
	Abnormal(11-21)	54	52.9	125	51.4	23	41.8	

Discussion

Premenstrual syndrome is a known cause of annoying symptoms, leading to social and occupational impact in the daily lives of affected females comparable to major depressive symptoms and with burdens on occupational, social, and mental wellbeing of those females.⁽²⁴⁾

Demographic characteristics of the studied sample:

The current study included 400 females, more than half of them (52.8%) were aged 15-25 years, and the majority were housewives (64.5%), and single (64.5%). A study by Al-Ameri *et al.*, which assessed the physical and psychological problems associated with PMS among 313 female students in Bab Al-Mu'aa'dham complex revealed that more than half of the participants were 20-21 years old; unmarried and with no ownership. The differences in the age group could be explained as the sample in the latter study involved college students⁽²⁵⁾. The results of the current study agreed with those reported in many earlier studies, which indicate that regardless of geographical distribution, ethnicity and occupation, females in the late teens and early twenties are frequently experiencing premenstrual complications⁽²⁶⁾.

Clinical characteristics of the studied sample:

Clinical characteristics of the current study sample revealed that more than half of females had family history of PMS or PMDD (57.8%), with regular cycles (70%), age of menarche was < 15 years (86.5%), duration of period was 3-6 days in (64%) and cycle length was 21-25 days in (69.5%) of the majority. This is slightly agrees with a study aimed to assess adolescent student's premenstrual syndrome in secondary schools at Erbil/ Kurdistan region of Iraq, in which the menstrual cycle started in age less than 15 years, duration 4-7 days, the length and duration was irregular which can be explained by the age group of the participants.⁽²⁷⁾ These findings are also different from a Korean study that included 151 nursing students, in which the majority had regular periods with a period mean duration of 5.72 days and menstrual cycle length of 29.38 days, and 42.4% of the participants found to have family history of PMS⁽²⁸⁾. These differences in menstrual clinical criteria are expected due to differences in geographical and climate states between the countries of the two samples besides ethnicity and genetic factors.

Anxiety score and anxiety related answers:

The current study examined the anxiety score of the recruited females, less than quarter of them (23%) were normal, less than one third (31%) had borderline anxiety and one third (46%) were with abnormal scores. Majority of the subjective answers were related to feeling tense or wound up most of the times (36.5%), worrying thoughts from time to time (34.3%), ,can sit ease and fell relaxed not often in (54.3%), frightening feeling very often in (31%). In a cross-sectional study that was conducted in Pakistan during 2020 by Abbas *et al.*, investigating the psychosocial symptoms of PMS that experienced by the recruited young females, anxiety and irritability were experienced by more than one third of study women. Moreover, when the women were asked about their perception and feelings, most of respondents admit that they feel "unclean or contaminated "during their monthly period. Some of them believed that PMS is one of the God's ways of punishing women and about 40% affirmed that they feel unwell, restless and their normal routine is markedly disturbed during the monthly period.⁽²⁹⁾

Depression score and depression related answers:

The current study examined also the depressive symptoms felt by the participants during PMS according to depression score, half of participant had abnormal score (51%), the remaining half was almost evenly divided between borderline (25%) and normal score (24%), the statements that evaluate depression were mainly towards, "not enjoying things as usual" only a little in (35%), "inability to laugh and see funny sides" not so much in (35.3%), "not Feeling cheerful" not at all in (43.5%), feeling slowed down sometimes in 46.3% "Lost of interest in the appearance" not quite as much care in (41.5%). This is consistent with a Śliwerski & Koszałkowska study in 2021 who utilized "Premenstrual Symptom Screening Tool (PSST)" among women by using a daily symptom calendar for two consecutive menstrual cycles. Women in this study reported depressed mood, fatigue, feeling overwhelmed, tension, and low interest in everyday activities⁽³⁰⁾.

Behavioral characteristics:

Regarding behavioral characteristics in the present study, sleeping disturbance was found in majority of participants (77%), in addition to social withdrawal (69%), difficulty in concentration (68.3%), change in appetite (87.8%) and craving for sweet food (81.5%), libido change for married women (48.1%), being aggressive (65%) and taking sick leave (32%). The same behavioral changes were reported in a cross sectional study done in College of

Medicine/ Tikrit University among female medical students, in which 35.5% of students had school absent during PMS period, and 31.8% experienced difficulty in concentration, social withdrawal during the same period ⁽³¹⁾. Another survey targeted users of the Flo mobile application, who aged 18-55 years old. The survey asked users about a range of PMS symptoms. A large sample of 238,114 participants from 140 countries responded to the survey questions. The most common symptoms reported were food cravings, mood swings or anxiety, and fatigue, work absentmindedness, sleep change, low libido, weight gain, nausea, headaches, hot flashes, hair changes, acne, and rashes, and swelling. Of the respondents, 28.61% reported that those symptoms interfered significantly with their everyday routine at each menstrual cycle ⁽³²⁾. These findings suggesting that premenstrual mood and behavioral changes are a worldwide common issue affecting women of reproductive age and large percent of them try to find answers to deal with it through different methods like mobile applications and internet search for example.

Physical characteristics:

Regarding the physical characteristics, most of participant in the current study had breast tenderness or swelling (83.5%), joints or muscle pain (92.5%), bloating sensation (87.5%), headache (75.3%), and dizziness (70%), feeling lethargy (95.8%), abdominal pain and cramps (97.3%), backache(94.8%), flare up of acne (76.8%), and hot flash(74.8%), this is in line with a cross-sectional study that was conducted in Iraq recruited 1270 university students by using online questionnaire about the PMS, menstrual cycle, and academic performance during the period of COVID 19 pandemic, the PMS symptoms that frequently reported by female students were mainly abdominal bloating, breast tenderness, acne flare, swelling extremities and dysmenorrhea.⁽³³⁾ The same symptoms had been also reported by a Korean study involved women in the premenstrual period experiencing intense symptoms of behavioral changes that significantly affect quality of life, compared to women with mild or no premenstrual symptoms ⁽³⁴⁾.

The association between self-rating stress and/or depression, and premenstrual symptoms had been reported in many studies. For instance, a cross-sectional study recruited female students from three universities in Pakistan demonstrated that most of the students reported stress/anxiety and depressive symptoms with marked behavioral changes exacerbated their premenstrual symptoms ⁽³⁵⁾. These findings are supported by a longitudinal study conducted in in the USA elucidated that women with high stress were significantly more likely to report an

increased severity and number of symptoms in the peri-menstrual and menstrual phases ⁽³⁶⁾

Association between anxiety, depression and other variables:

The current study found no significant relation between anxiety score and demographic data in terms of educational level, occupation, marital status, and children number. However, younger age group (15-25) showed a significant association with abnormal score of anxiety (53%), while older aged (36 - 49 years) had association with normal score (44.4%), also those with family history of PMS had significant association with abnormal anxiety score (51.1%). On the other hand, there was no significant association between depression and sociodemographic data, clinical characteristics, and family history. Nevertheless, females with low educational level illiterate (54.5%) and primary school (69%) and menarche <15 years (50.9%) had significant association with abnormal depression score. The current study findings are similar to what reported in Matsumoto *et al.*, study. ⁽³⁷⁾.

Regarding socioeconomic index in the current study, most of the studied sample were with intermediate SES (SES index= 6-10), 51% with significant relation with abnormal anxiety score and no significant relation to depression score. These results are comparable to the Murakam *et al.*, study which investigated young Japanese women aged 18-22 years, the study found that SES index was positively associated with pain, water retention, nevertheless, a clear relationship with depressive premenstrual symptoms was not found in that study ⁽³⁸⁾.

Although further investigation is needed with prospective studies to evaluate premenstrual conditions precisely, the current study affirms that a majority of the sample were aware of depressive, stressful, and behavioral problems, with a wide range of severity, and impact on the routine of daily life.

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