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OFICJALNE PISMO POLSKIEGO TOWARZYSTWA FIZJOTERAPII

THE OFFICIAL JOURNAL OF THE POLISH SOCIETY OF PHYSIOTHERAPY

NR 5/2022 (22) KWARTALNIK ISSN 1642-0136

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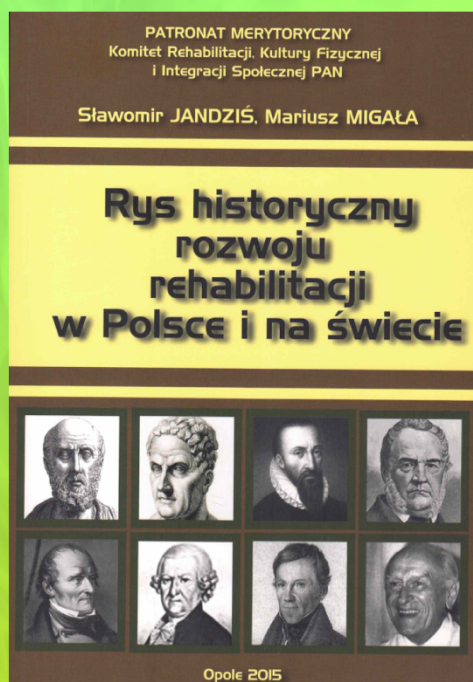
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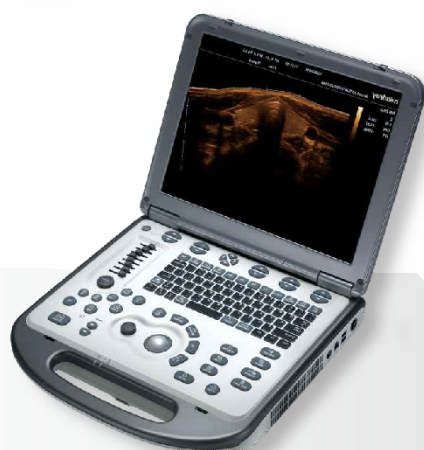
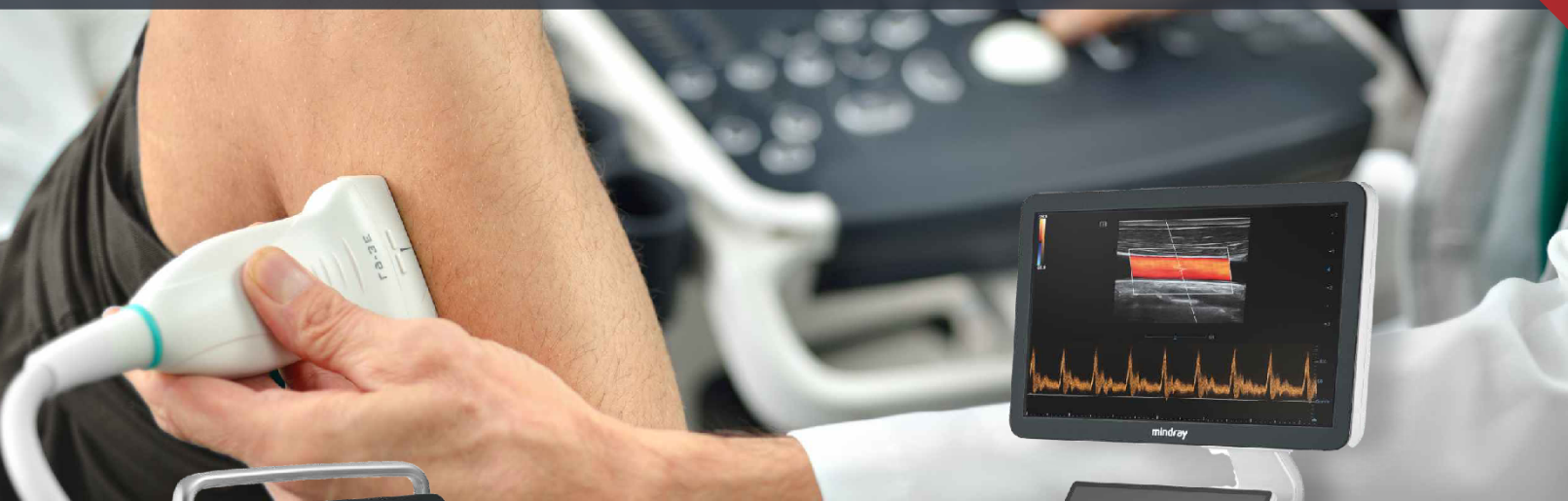
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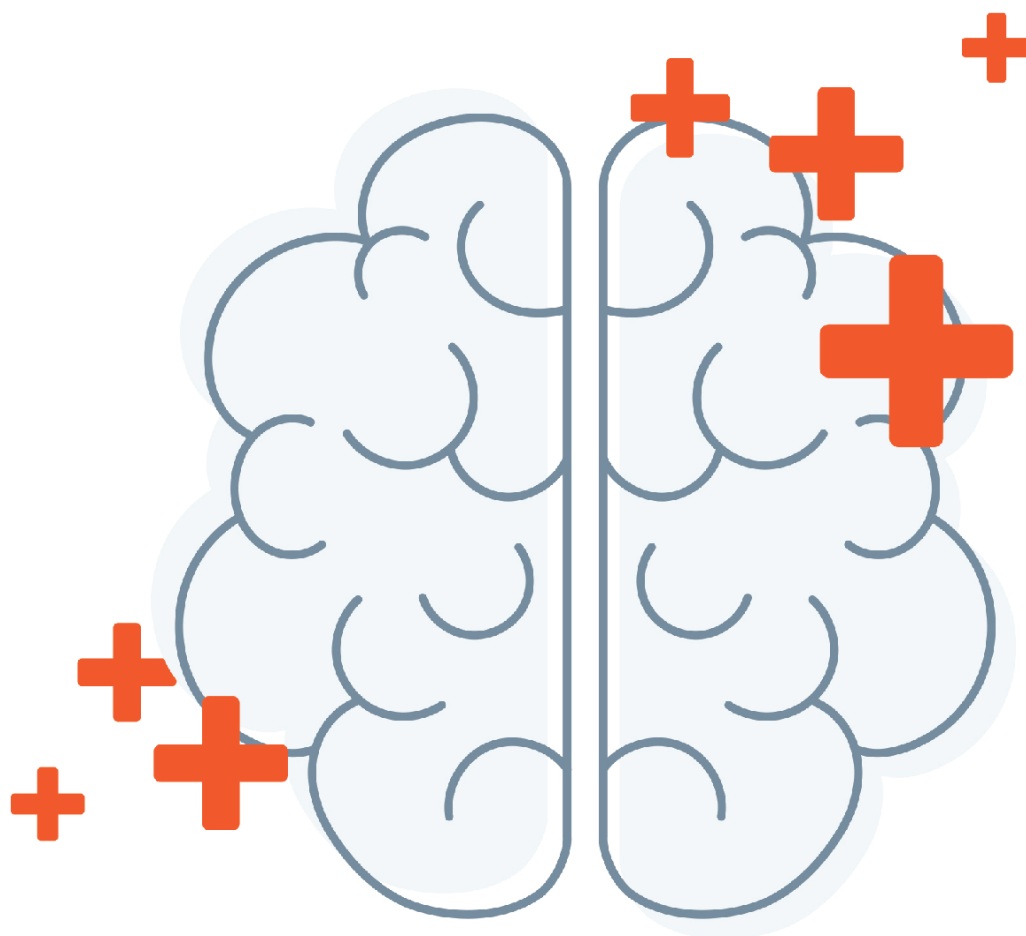

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Premenstrual syndrome and its biopsychosocial symptoms among physiotherapy students in Eastern Delta: An exploratory study

Zespół napięcia przedmiesiączkowego i jego objawy biopsychospołeczne wśród studentek fizjoterapii we Wschodniej Deltcie: badanie eksploracyjne

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Abstract

Background. During the luteal phase of the menstrual cycle, a set of clinically significant physical and psychological symptoms known as premenstrual syndrome (PMS) emerge. This condition can be extremely distressing and hinder females' ability to work.

Purpose. To calculate the prevalence and severity of PMS and its biopsychosocial symptoms in female physiotherapy students in Eastern Delta and to investigate the relationship between various socio-demographic and reproductive factors.

Methods. At Delta University for Science and Technology in Gamasa, Egypt, 396 female physiotherapy students participated in an exploratory cross-sectional survey with a mean age of 20.23 ± 1.07 years and BMI with a mean of 28.86 ± 5.05 kg/m². The premenstrual syndrome scale (PMSS) was adopted to assess the prevalence of PMS and related symptoms, and a self-administered questionnaire was used to gauge sociodemographic and reproductive data.

Results: Three hundred ninety-six females of 438 females completed the study. In 85% of cases, PMS predominated research calculations. The PMS group displayed symptoms of fatigue, cramping in the abdomen, tension, mood fluctuations, and decreased productivity more overtly. According to a multiple linear regression analysis, living in a rural area, hitting menarche earlier, having a higher BMI, and having a family history were all significantly linked to PMS ($p < 0.05$). **Conclusion.** Female students have a high prevalence of PMS and its biopsychosocial symptoms. Therefore, adoption of preventive reproductive health and counseling services should be implemented as a standard component of routine clinical treatment for university students.

Keywords

premenstrual syndrome, Egypt, premenstrual syndrome scale, biopsychosocial symptoms, physiotherapy students

Streszczenie

Informacje wprowadzające. Podczas fazy lutealnej cyklu miesięczkowego pojawiają się istotne klinicznie objawy fizyczne i psychiczne, znane jako zespół napięcia przedmiesiączkowego (PMS). Ten stan może być niezwykle niepokojący i może utrudniać kobietom zdolność wykonywania pracy.

Cel. Określenie częstości występowania i nasilenia PMS oraz jego objawów biopsychospołecznych u studentek fizjoterapii we wschodniej Deltcie oraz zbadanie związku między różnymi czynnikami socjodemograficznymi i reprodukcyjnymi.

Metody. Na Delta University for Science and Technology w Gamasa w Egipcie 396 studentek fizjoterapii wzięło udział w eksploracyjnym badaniu przekrojowym. Średnia wieku wynosiła $20,23 \pm 1,07$ roku, a średnie BMI $28,86 \pm 5,05$ kg/m². Skala zespołu napięcia przedmiesiączkowego (PMSS) została przyjęta do oceny częstości występowania PMS i powiązanych objawów, a do oceny danych socjodemograficznych i reprodukcyjnych wykorzystano kwestionariusz do samodzielnego wypełniania.

Wyniki: Badanie ukończyło 396 kobiet spośród 438. W 85% przypadków PMS dominował w obliczeniach badawczych. W grupie PMS objawy zmęczenia, skurcze w jamie brzusznej, napięcie, wahania nastroju i obniżona produktywność były bardziej widoczne. Zgodnie z analizą wielokrotnej regresji liniowej, mieszkanie na wsi, wczesna pierwsza miesiączka, wyższe BMI i historia rodzinna były istotnie powiązane z PMS ($p < 0,05$).

Wniosek. U studentek zaobserwowano częste występowanie PMS i jego objawów biopsychospołecznych. W związku z tym profilaktyczne świadczenia w zakresie zdrowia reprodukcyjnego i poradnictwa powinny zostać wdrożone jako standardowy element rutynowego leczenia klinicznego studentek.

Słowa kluczowe

zespół napięcia przedmiesiączkowego, Egipt, skala zespołu napięcia przedmiesiączkowego, objawy biopsychospołeczne, studentki fizjoterapii

Introduction

Premenstrual syndrome (PMS) is the name given to a group of cyclical symptoms that occur during the second half (luteal phase) of the menstrual cycle and vanish at the beginning or a few days after menstrual onset [1].

Adolescence is a special period in human growth, both psychologically and physically. It is an important and vulnerable period between childhood and adulthood; this period ranges between the ages of 10 to 24 years [2]. Moreover, PMS is more prevalent in these age groups, making it a serious public health issue for young girls. Furthermore, it was found that in this group, discussing menstruation was very private and secretive, therefore only a small percentage of girls with menstrual problems sought professional help [3].

Women facing stress are typically the ones to experience PMS. Both PMS and neuroendocrine system complications may result due to prolonged stress exposure. Adolescents are undergoing substantial physical and psychological changes as they transition to adulthood. In addition, stress among students is frequently brought on by activities related to schooling as well as their sexual and reproductive health [4].

Although PMS does not constitute a life-threatening hazard, there are far more than 150 symptoms that identify PMS, from mood changes to weight gains to acne. The symptoms vary from cycle to cycle and from woman to woman. For some women, the symptoms are mild to moderate, while for others, they are incapacitating [5], lowering the quality of life, increasing absenteeism from work and school, decreasing productivity, academic performance, and mental health, as well as worsening interpersonal relationships [6, 7].

A spectrum of biosocial and psychological theories has been put forth to explain the condition, including altered transcapillary fluid balance, a diet high in beef or caffeine-containing beverages, aberrant serotonin function, the presence of progesterone, altered endorphin modulation of gonadotropin production, activity levels, smoking, and alcohol use [8].

The Egyptian community is undergoing a rapid population growth rate with a 1.92% increase in 2020 compared to 2019. The total population of Egypt in 2022 stood at 102.88 million inhabitants; 28.53% of them are between the ages of 10 to 24 years and just 6.83% are over the age of 60, making it one of the most youthful populations in the world [9].

Since there are no specific physical exam findings or laboratory tests for the diagnosis of PMS [10], the syndrome is diagnosed through epidemiological studies, which have demonstrated inconsistencies in the prevalence of PMS according to the studied population, methodology and type of scale used [11].

Taking into account several hypotheses, adolescent females in the Eastern Delta should experience PMS at roughly the same rates as girls in Western nations. Additionally, it was hypothesized that there was no association between PMS, and socio-demographic/reproductive variables. The objectives of the study were (a) to estimate the prevalence and severity of PMS and its biopsychosocial symptoms in female physiotherapy students at Delta University for Science and Technology, Gamasa, Egypt, and (b) to examine the relationship between various socio-demographic and reproductive variables of PMS.

Subjects and methods

Study Design

An observational cross-sectional design was adopted in the current study. Before the study began, the Faculty of Physical Therapy, Cairo University's institutional review board approved the research conduction (No:P.T.REC/012/003684). The Helsinki Declaration Principles for Human Research were taken into account in this study. The participants provided their written informed consent to participate in this study. It took place in February of the 2021–2022 academic year (after mid-year vacation).

Recruitment

A total sample of 396 undergraduate female students from the five academic levels of Faculty of Physical Therapy, Delta University for Science and Technology, Gamasa, Egypt, was randomly invited to participate in the study through flyers and social media invitations. The cases were chosen using a stratified cluster sampling technique, conducted by an independent research assistant, who was not aware of the study procedures. First, groups of students were created based on academic years (first to fifth). Each year had a portion or group (cluster) chosen at random. All cases in the chosen cluster participated in the study. Each participant was asked for their informed consent after being told of the nature, purpose, and advantages of the study as well as her right to refuse or withdraw at any time and the confidentiality of any information gathered.

Eligibility criteria

In this study, healthy, self-reported virgin, nonsmoking female physiotherapy students between the ages of 18 and 22 years old from various faculty educational levels were included. The students were chosen unmarried because they were reported to be the most affected category compared to the married females, who have more commitments and face more social and economic challenges which put them under chronic stress and make them more prone to experience menstrual disorder [12]. Students, who had any current medical, psychiatric, or gynecological issues, including amenorrhea or significant pelvic pain as a result of a confirmed or suspected diagnosis of endometriosis or pelvic inflammatory disease, were all excluded from the study.

Outcome measures

The primary outcome for the study was the prevalence of PMS and its biopsychosocial symptoms, assessed by premenstrual syndrome scale (PMSS), and the secondary outcome was the sociodemographic and reproductive traits, investigated by self-administered survey. Data from both the questionnaire and survey were self-reported and were collected by an investigator, blinded to the study hypothesis.

Premenstrual syndrome scale (PMSS)

A questionnaire based on the premenstrual syndrome scale (PMSS) of Padmavathi et al., 2014 was adopted in English version to diagnose PMS by the criteria of the Statistical Manual of Mental Disorders, Fifth Edition (DSM-IV) and the American College of Obstetrics and Gynecology. The original PMSS, which consists of 44 items, was firstly developed by Gençdoğan in 2006 [13]. Then, it was modified by Padmavathi et al. in 2014 to inclu-

de only 40 items, which was used in the current study. This scale used Likert scale with five response options: "Never," "Rarely," "Occasionally," "Frequently," and "Very Frequently." Its three subscale physical symptoms (questions from 1 to 16), psychological symptoms (questions from 17 to 28), and behavioral symptoms (questions from 29 to 40) – combine to form the "PMSS total score". The "PMSS total score," which varied from 40 to 200, was determined by adding the total scores from the sub-scales. The diagnosis of PMS was made if the scale's overall score was 81 or higher. The severity of PMS increases in direct proportion to the increase in scale total scores [14].

The 40 questions posed to the female students during the previous three menstrual cycles represented their symptoms during the mid-cycle phase, which is 14 days before menstruation. Each student's total score was then calculated, and their symptoms were categorized according to their total score, with normal or no symptoms being classified as a total score of less than 40, mild symptoms being classified as a total score between 41 and 80, moderate symptoms being classified as a total score between 81 and 120, severe symptoms being classified as a total score between 121 and 160, and very severe symptoms being classified as a total score between 161 and 200 [14]. One of the instruments used to assess the prevalence of PMS in adolescents is the PMSS [15]. Along with high school [16] and university students [17], this scale has been applied to a variety of groups during the fertile period [18].

The original PMSS scale, developed by Gençdoğan [13], was claimed to have reliability correlation of 0.71, 1-month interval test-retest correlation of 0.87, and item total score correlation of 0.35-0.78 ($P < 0.001$). Cronbach's Alpha coefficient of PMSS items was 0.75 while those of its subscales were between 0.75 and 0.91. In factor analysis, 9 factors were determined to explain the variance by 70.51%. PMSS findings reveal that the scale is valid and reliable in evaluating the premenstrual symptoms. For the modified version by Padmavathi et al. [14], validity and reliability assessments with sensitivity ranging from 83-100%, specificity ranging from 64-90%, and reliability ranging from 0.81 to 0.97 were undertaken.

Socio-demographic and reproductive characteristics

The cases responded to a private, self-administered survey about their sociodemographic traits (age, body mass index (BMI), and place of residence) and reproductive traits (age of menarche, regularity of menstruation, menstrual duration, amount of menstrual blood, family history of PMS experience for the mothers and sisters, and level of physical activity) [19].

Sample size estimation and statistical analysis

Epi Info software was used to establish a representative sample size (version 6.02). There were 1650 enrolled female students in 2021. 32 students from different academic years participated in a one-week pilot study that found that about 50% of the students had PMS. A sample of at least 312 students was thought to be necessary for the study, with a power of 80% and a confidence level of 95%. 10% was added to the final sample size of 343 students to account for the sampling error caused by the cluster-sampling technique.

A personal computer was used to edit, code, and input the questionnaire data, with blinding of the data analyst till the final analysis. For statistical analysis, the Statistical Package for Social Science (SPSS) for Windows (version 11.0) was employed. Frequency and descriptive analyses were used to examine continuous and categorical variables. Girls with and without PMS were compared in terms of their sociodemographic and reproductive features using the chi-square test and the independent t-test. To examine the correlation between PMS and sociodemographic and reproductive variables, multiple linear regression analysis was used. The significance level's P-value was established at 0.05.

Results

Four hundred thirty-eight questionnaires (438) were distributed in this study, 416 of them were returned by the students; 396 questionnaires were valid and used in the data analysis, while 20 questionnaires were excluded from the study (4 questionnaires for married students, 5 questionnaires with missing data, 2 questionnaires for girls above age of 22 years, 8 questionnaires for girls having amenorrhea, and 1 questionnaire for a girl diagnosed as endometriosis) (Figure 1).

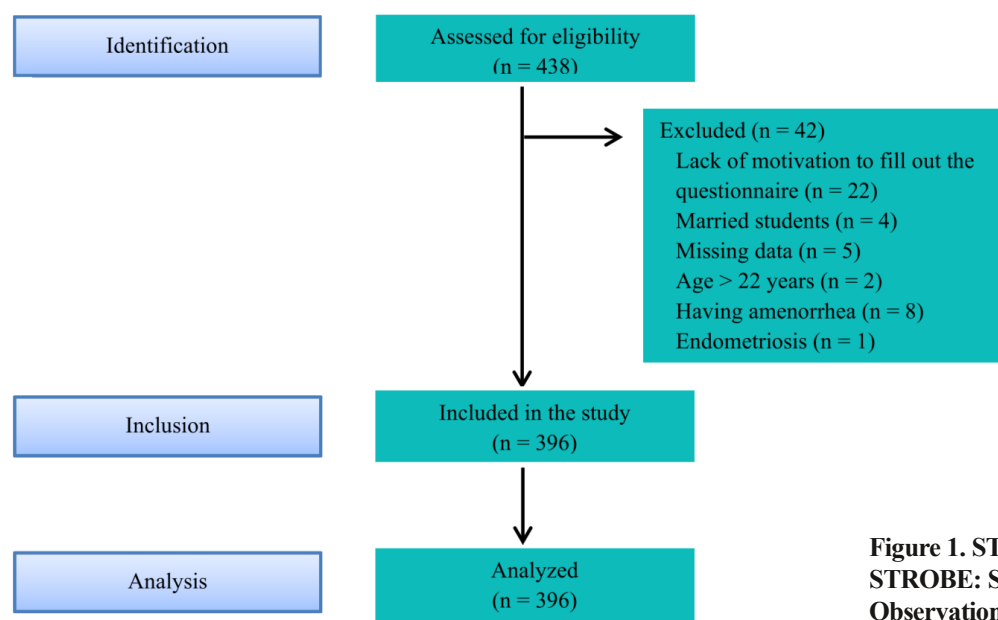


Figure 1. STROBE flow-chart of participants. STROBE: Strengthening the Reporting of Observational Studies in Epidemiology

General characteristics of the study sample

The sample comprised 396 undergraduate students, representing the five academic levels in the Faculty of Physical Therapy, Delta University for Science and Technology; their ages ranged

from 18 to 22 years, with a mean age of 20.23 ± 1.07 years and BMI ranged from 18.5 to 37.1 with a mean of 28.86 ± 5.05 kg/m² (Table 1).

Table 1. General characteristics of the study sample (n = 396)

	Minimum age	Maximum age	Mean	SD
Age [years]	18.00	22.00	20.23	1.07
BMI [kg/m ²]	18.5	37.10	28.86	5.05

BMI = Body mass index; SD = Standard deviation

Prevalence of PMS

13 girls (3%) had no symptoms, 47 (12%) had mild symptoms, 131 (33%) had moderate symptoms, 141 (36%) had severe symptoms, and 64 (16%) had very severe symptoms, according

to an analysis of the 396 surveys' total PMSS scores. The percentage of females having moderate, severe, and very severe symptoms, was added to determine the prevalence of PMS, which was equal to 85% of cases (336 instances) (Table 2).

Table 2. Distribution of girls according to PMSS total scores

Level of symptoms	Reference Actual Scores	No of Cases	Percentage of Cases
No symptoms	40	13	3%
Mild symptoms	41–80	47	12%
Moderate symptoms	81–120	131	33%
Severe	121–160	141	36%
Very Severe	161–200	64	16%
Total		396	100%
Prevalence of PMS (Total score \geq 81)			<u>85%</u>

PMS = Premenstrual syndrome

Biopsychosocial Symptoms of PMS

Table (3) shows the responses of the 396 participants to the 40 questions of the PMSS. For clarification of the most frequent

PMS symptom/symptoms; the responses of the PMS cases were separated from the total cases (Table 4, 5).

Table 3. Distribution of PMS biopsychosocial symptoms among all study sample

Premenstrual syndrome scale (PMSS) N = 396											
Q	Symptom	Never (1)		Rarely (2)		Sometimes (3)		Very often (4)		Always (5)	
		No.	%	No.	%	No.	%	No.	%	No.	%
Physiological symptoms											
1	Breast tenderness and swelling	65	16%	55	14%	109	28%	75	19%	92	23%
2	Abdominal bloating	108	27%	51	13%	78	20%	85	21%	74	19%
3	weight gain	130	33%	48	12%	101	26%	61	15%	56	14%
4	Headache	76	19%	90	23%	140	35%	52	13%	38	10%
5	Dizziness/fainting.	107	27%	109	28%	89	22%	35	9%	56	14%
6	Fatigue	36	9%	24	6%	138	35%	79	20%	119	30%
7	Palpitations	141	36%	88	22%	91	23%	32	8%	44	11%
8	Pelvic discomfort and pain	56	14%	24	6%	104	26%	67	17%	145	37%
9	Abdominal cramps	51	13%	22	6%	151	38%	56	14%	116	29%
10	Change in bowel habits	146	37%	61	15%	94	24%	38	10%	57	14%
11	Increased appetite	108	27%	41	10%	112	28%	65	16%	70	18%
12	Generalized aches and pains	88	22%	59	15%	82	21%	39	10%	128	32%

Premenstrual syndrome scale (PMSS) N = 396											
Q	Symptom	Never (1)		Rarely (2)		Sometimes (3)		Very often (4)		Always (5)	
		No.	%	No.	%	No.	%	No.	%	No.	%
13	Food cravings (Sugar/ Salt)	105	27%	36	9%	88	22%	81	20%	86	22%
14	Skin changes, rashes, pimples	182	46%	54	14%	57	14%	18	5%	85	21%
15	Nausea/vomiting	175	44%	83	21%	70	18%	36	9%	32	8%
16	Muscle and Joint pain	54	14%	25	6%	98	25%	91	23%	128	32%
Psychological symptoms											
17	Irritability	69	17%	55	14%	116	29%	82	21%	74	19%
18	Anxiety	39	10%	51	13%	103	26%	82	21%	121	31%
19	Tension	42	11%	28	7%	82	21%	105	27%	139	35%
20	Mood swings	41	10%	32	8%	95	24%	71	18%	157	40%
21	Loss of concentration	56	14%	32	8%	111	28%	98	25%	99	25%
22	Depression	53	13%	66	17%	85	21%	58	15%	134	34%
23	Forgetfulness	109	28%	102	26%	60	15%	56	14%	69	17%
24	Easy crying/ Crying spells	57	14%	26	7%	107	27%	65	16%	141	36%
25	Sleep changes (Insomnia/hypersomnia)	61	15%	89	22%	90	23%	39	10%	117	30%
26	Confusion	82	21%	48	12%	113	29%	54	14%	99	25%
27	Aggression	81	20%	51	13%	129	33%	38	10%	97	24%
28	Hopelessness	92	23%	58	15%	98	25%	37	9%	111	28%
Behavioral symptoms											
29	Social withdrawal	92	23%	60	15%	97	24%	49	12%	98	25%
30	Restlessness	102	26%	45	11%	88	22%	62	16%	99	25%
31	Lack of self-control	99	25%	85	21%	65	16%	55	14%	92	23%
32	Feeling guilty	106	27%	95	24%	64	16%	65	16%	66	17%
33	Clumsiness	104	26%	104	26%	82	21%	49	12%	57	14%
34	Lack of interest in usual activities	71	18%	22	6%	103	26%	121	31%	79	20%
35	Poor judgment	115	29%	71	18%	110	28%	53	13%	47	12%
36	Impaired work performance	59	15%	26	7%	89	22%	130	33%	92	23%
37	Obsessional thoughts	79	20%	106	27%	75	19%	61	15%	75	19%
38	Compulsive behavior	113	29%	95	24%	76	19%	41	10%	71	18%
39	Irrational thoughts	104	26%	90	23%	59	15%	57	14%	86	22%
40	Being over-sensitive	49	12%	27	7%	49	12%	81	20%	190	48%

Table 4. Distribution of biopsychosocial symptoms among girls diagnosed with PMS

Premenstrual syndrome scale (PMSS) N = 336											
Q	Symptom	Never (1)		Rarely (2)		Sometimes (3)		Very often (4)		Always (5)	
		No.	%	No.	%	No.	%	No.	%	No.	%
Physiological symptoms											
1	Breast tenderness and swelling	31	9%	47	14%	100	30%	67	20%	91	27%
2	Abdominal bloating	62	18%	40	12%	75	22%	85	25%	74	22%
3	weight gain	80	24%	40	12%	99	29%	61	18%	56	17%
4	Headache	41	12%	79	24%	129	38%	49	15%	38	11%
5	Dizziness/fainting.	58	17%	104	31%	85	25%	33	10%	56	17%
6	Fatigue	13	4%	17	5%	110	33%	77	23%	119	35%
7	Palpitations	94	28%	80	24%	86	26%	32	10%	44	13%

Premenstrual syndrome scale (PMSS) N = 336											
Q	Symptom	Never (1)		Rarely (2)		Sometimes (3)		Very often (4)		Always (5)	
		No.	%	No.	%	No.	%	No.	%	No.	%
8	Pelvic discomfort and pain	19	6%	17	5%	93	28%	62	18%	145	43%
9	Abdominal cramps	16	5%	14	4%	141	42%	49	15%	116	35%
10	Change in bowel habits	105	31%	51	15%	90	27%	33	10%	57	17%
11	Increased appetite	70	21%	32	10%	103	31%	61	18%	70	21%
12	Generalized aches and pains	40	12%	56	17%	75	22%	37	11%	128	38%
13	Food cravings (Sugar/ Salt)	59	18%	31	9%	81	24%	79	24%	86	26%
14	Skin changes, rashes, pimples	129	38%	51	15%	55	16%	16	5%	85	25%
15	Nausea/vomiting	123	37%	81	24%	65	19%	35	10%	32	10%
16	Muscle and Joint pain	28	8%	20	6%	81	24%	84	25%	123	37%
Psychological symptoms											
17	Irritability	34	10%	44	13%	105	31%	79	24%	74	22%
18	Anxiety	14	4%	40	12%	81	24%	80	24%	121	36%
19	Tension	13	4%	17	5%	63	19%	104	31%	139	41%
20	Mood swings	14	4%	16	5%	85	25%	64	19%	157	47%
21	Loss of concentration	15	4%	21	6%	106	32%	95	28%	99	29%
22	Depression	20	6%	46	14%	80	24%	56	17%	134	40%
23	Forgetfulness	59	18%	97	29%	55	16%	56	17%	69	21%
24	Easy crying/ Crying spells	17	5%	19	6%	97	29%	62	18%	141	42%
25	Sleep changes (Insomnia/hypersomnia)	29	9%	73	22%	80	24%	37	11%	117	35%
26	Confusion	35	10%	43	13%	108	32%	51	15%	99	29%
27	Aggression	23	7%	49	15%	129	38%	38	11%	97	29%
28	Hopelessness	34	10%	56	17%	98	29%	37	11%	111	33%
Behavioral symptoms											
29	Social withdrawal	47	14%	55	16%	87	26%	49	15%	98	29%
30	Restlessness	56	17%	34	10%	85	25%	62	18%	99	29%
31	Lack of self-control	58	17%	68	20%	63	19%	55	16%	92	27%
32	Feeling guilty	59	18%	85	25%	61	18%	65	19%	66	20%
33	Clumsiness	57	17%	93	28%	80	24%	49	15%	57	17%
34	Lack of interest in usual activities	23	7%	15	4%	98	29%	121	36%	79	24%
35	Poor judgment	62	18%	64	19%	110	33%	53	16%	47	14%
36	Impaired work performance	16	5%	17	5%	81	24%	130	39%	92	27%
37	Obsessional thoughts	45	13%	87	26%	68	20%	61	18%	75	22%
38	Compulsive behavior	65	19%	85	25%	74	22%	41	12%	71	21%
39	Irrational thoughts	63	19%	75	22%	55	16%	57	17%	86	26%
40	Being over-sensitive	14	4%	22	7%	41	12%	76	23%	183	54%

Table 5. Analysis of biopsychosocial symptoms of PMS cases

Premenstrual syndrome scale (PMSS) N = 336					
Q	Symptom	Never and rarely symptoms		Sometimes, very often, and always symptoms	
		No.	%	No.	%
Physiological symptoms					
1	Breast tenderness and swelling	78	23%	258	77%
2	Abdominal bloating	102	30%	234	70%
3	weight gain	120	36%	216	64%

Premenstrual syndrome scale (PMSS) N = 336					
Q	Symptom	Never and rarely symptoms		Sometimes, very often, and always symptoms	
		No.	%	No.	%
4	Headache	120	36%	216	64%
5	Dizziness/fainting.	162	48%	174	52%
6	Fatigue	30	9%	306	91%
7	Palpitations	174	52%	162	48%
8	Pelvic discomfort and pain	36	11%	300	89%
9	Abdominal cramps	30	9%	306	91%
10	Change in bowel habits	156	46%	180	54%
11	Increased appetite	102	30%	234	70%
12	Generalized aches and pains	96	29%	240	71%
13	Food cravings (Sugar/ Salt)	90	27%	246	73%
14	Skin changes, rashes, pimples	180	54%	156	46%
15	Nausea/vomiting	204	61%	132	39%
16	Muscle and Joint pain	48	14%	288	86%
Psychological symptoms					
17	Irritability	78	23%	258	77%
18	Anxiety	54	16%	282	84%
19	Tension	30	9%	306	91%
20	Mood swings	30	9%	306	91%
21	Loss of concentration	36	11%	300	89%
22	Depression	66	20%	270	80%
23	Forgetfulness	156	46%	180	54%
24	Easy crying/ Crying spells	36	11%	300	89%
25	Sleep changes (Insomnia/hypersomnia)	102	30%	234	70%
26	Confusion	78	23%	258	77%
27	Aggression	72	21%	264	79%
28	Hopelessness	90	27%	246	73%
Behavioral symptoms					
29	Social withdrawal	102	30%	234	70%
30	Restlessness	90	27%	246	73%
31	Lack of self-control	126	38%	210	63%
32	Feeling guilty	144	43%	192	57%
33	Clumsiness	150	45%	186	55%
34	Lack of interest in usual activities	38	11%	298	89%
35	Poor judgment	126	38%	210	63%
36	Impaired work performance	33	10%	303	90%
37	Obsessional thoughts	132	39%	204	61%
38	Compulsive behavior	150	45%	186	55%
39	Irrational thoughts	138	41%	198	59%
40	Being over-sensitive	36	11%	300	89%

Physiological symptoms of PMS

Sixteen questions represented the physiological symptoms in the PMSS, among which fatigue and abdominal cramps were the most frequent physiological symptoms in 91% of the PMS cases,

followed by pelvic discomfort and pain in 89% and muscle and joint pain in 86% of cases. The least common physiological symptoms were nausea/vomiting by 39%, skin changes, rashes and pimples by 46%, palpitations by 48%, and dizziness/fainting by 52%.

Psychological symptoms of PMS

Psychological symptoms were represented by 12 questions in the PMSS, tension and mood swings were the most frequent psychological symptoms in 91% of the PMS cases, followed by loss of concentration, easy crying/ crying spells in 89% and anxiety in 84% of cases. The least common psychological symptom reported in PMS cases was forgetfulness by 54%.

Behavioral symptoms of PMS

Behavioral symptoms showed in 12 questions in the PMSS, impaired work performance was the most frequent behavioral symptom in 90% of the PMS cases, followed by lack of interest in usual activities and being oversensitive in 89% of cases, while clumsiness and compulsive behavior were the least behavioral symptoms reported by the PMS cases by 55%.

Socio-demographic and reproductive characteristics

The socio-demographic and reproductive characteristics were compared between PMS and non-PMS cases using the chi-square test and independent t-test. They showed statistically significant differences, with the PMS group showing a trend toward rural living, an earlier age of menarche, a higher body mass index, more regular cycles, a positive family history of PMS, and little physical activity (Table 6). In females with PMS, the Multiple Linear Regression analysis revealed a statistically apparent relationship between PMS and rural residence (odd ratio (OR) 5.05; 95% confidence Interval (CI) 2.59 to 9.85; $p < 0.001$), earlier menarche age (OR 0.64; 95% CI 0.48 to 0.86; $p = 0.003$), greater BMI (OR 1.13; 95% CI 1.06 to 1.21; $p < 0.001$), and family history (OR 2.13; 95% CI 1.13 to 4.01; $p = 0.020$) (Table 7).

Table 6. Socio-demographic and reproductive characteristics of PMS and non-PMS cases

		PMS Cases N = 336		Non-PMS Cases N = 60		Statistics	P-value
Residence	Urban	102	30.4%	43	71.7%	$\chi^2 = 37.43$	< 0.001*
	Rural	234	69.6%	17	28.3%		
Age of menarche	Mean \pm SD	11.69 \pm 1.07		12.28 \pm 1.04		t = -3.93	< 0.001*
	≤ 12 years	198	58.9%	22	36.7%	$\chi^2 = 10.22$	0.001*
	> 12 years	138	41.1%	38	63.3%		
Body mass index	Mean \pm SD	29.34 \pm 4.86		26.18 \pm 5.34		t = -4.57	< 0.001*
	< 30 kg/cm ²	147	43.8%	45	75.0%	$\chi^2 = 19.91$	< 0.001*
	≥ 30 kg/cm ²	189	56.3%	15	25.0%		
Regularity of menstruation	Regular	195	58.0%	24	40.0%	$\chi^2 = 6.70$	0.010*
	Irregular	141	42.0%	36	60.0%		
Duration of menstruation	< 3 days	135	40.2%	11	18.3%	$\chi^2 = 10.44$	0.001*
	3-7 days	73	21.7%	26	43.3%		
	> 7 days	128	38.1%	23	38.3%		
Amount of menstrual bleeding	Less than average	99	29.5%	18	30.0%	$\chi^2 = 2.26$	0.323
	Average	84	25.0%	20	33.3%		
	More than average	153	45.5%	22	36.7%		
Family history of PMS	Absent	131	39.0%	33	55.0%	$\chi^2 = 5.38$	0.020*
	Present	205	61.0%	27	45.0%		
Physical activity	Limited	217	64.6%	29	48.3%	$\chi^2 = 5.71$	0.017*
	Unlimited	119	35.4%	31	51.7%		

PMS = Premenstrual syndrome; χ^2 = chi-square; p-value = probability; * = significant with $p < 0.05$

Table 7. Multiple logistic regressions for the factors associated with PMS

	OR	Standard error	Z score	P-value	95% CI of OR	
Residence						
Urban	1.00					
Rural	5.05	1.72	4.75	< 0.001*	2.59	9.85
Age of menarche						
	0.64	0.10	−2.96	0.003*	0.48	0.86
BMI						
	1.13	0.04	3.83	< 0.001*	1.06	1.21
Regularity						
Regular	0.73	0.24	−0.94	0.346	0.38	1.40
Irregular	1.00					
Duration						
Less than 3 days	1.00					
3 to 7 days	0.62	0.28	−1.07	0.285	0.26	1.48
More than 7 days	0.82	0.33	−0.49	0.622	0.37	1.80
Amount						
Less than average	1.00					
Average	1.25	0.55	0.51	0.613	0.53	2.96
More than average	1.61	0.65	1.18	0.237	0.73	3.57
Family history						
No	1.00					
Yes	2.13	0.69	2.34	0.020*	1.13	4.01
Physical activity						
Unlimited	1.00					
Limite	1.49	0.49	1.23	0.220	0.79	2.84

BMI = Body mass index; OR = Odd ratio; p-value = probability; CI = Confidence interval; * = significant with $p < 0.05$

Discussion

In the current study, the prevalence of PMS was found to be 85% of the tested cases of physical therapy students at Delta University for Science and Technology, Egypt. This rate was consistent with the prevalence rates among medical students of Ain Shams and El-Minia Universities, Egypt (89.6% and 80.2% respectively) [20,21]. In a similar vein, over the past 20 years, several surveys on the prevalence of PMS in Middle Eastern nations have been conducted. For example, the PMS rate among university students was 71.9% in Palestine [22], 92.3% in Jordan [23], and 63% in Lebanon [24]. Moreover, the worldwide prevalence of PMS was found to be 99.6% for Jima university students in Ethiopia [25], 98% for university students in Thailand [26], and 91% for Turkish medical students [27].

On the other hand, a 2014 systematic review and meta-analysis suggested a lower worldwide prevalence of PMS of

47.8%, with the highest prevalence in Iran (98%) and the lowest prevalence in France (12%) [28]. The fact that different diagnostic scales were used, different age groups, and various sociocultural and socioeconomic groups were studied could all have an impact on the results of the prevalence of PMS in the studies that were done.

The frequency distribution of the PMS cases as measured by PMSS was allocated as; 12% mild, 33% moderate, and 52% severe cases. This frequency order was almost identical to that which Tabassum et al. [29] described in their study. It was intriguing to observe that, contrary to what Nisar et al. [30] had found; the frequency of severe PMS was high in our research (5.8 percent and 4.4 percent, respectively). This discrepancy may be attributed to the recent rise in young women's empowerment and gender-affirming attitudes in Egypt as a result of society's rapid development, which has increased perception and awareness. The high prevalence of severe PMS in adole-

scent girls may also be caused by a lack of awareness among college students regarding the causes and treatments of PMS. Furthermore, the long study sessions caused them a lot of stress [31], which could negatively impact the intensity of PMS symptomatology through affecting their eating habits and inducing them to skip breakfast. Consuming carbohydrates for breakfast may increase beneficial nutrients for the brain after a night of fasting since it lowers cortisol levels and thus stress signals. Carbohydrate conversion to glucose is required for the synthesis of tryptophan, a precursor protein for the formation of serotonin, which affects symptoms of depression, mood irritation, and cognitive functioning – all of which are symptoms of PMS [32]. By the end of the academic year 2021–2022, the Central Agency for Public Mobilization and Statistics [33] reported that women made up nearly 49.2% of all university students in Egypt.

Concerning the biopsychosocial symptoms of the scale, the present study showed that the most common physiological symptoms of PMS cases were fatigue and abdominal cramps (91%), pelvic discomfort and pain (89%), muscle and joint pain (86%), breast tenderness (77%), abdominal bloating (70%) and headache (64%), while the study of Costanian et al. [24] reported abdominal bloating (70.8%) and breast tenderness (50.1%) as far as the study of Buddhanyakan et al. [34] stated breast tenderness (74.4%), headache (70.9%), and abdominal bloating (46.5%) as the most common somatic symptoms. Also, the most frequent severe physical symptoms in the study of Abu Alwafa et al. [35] were muscle, joint, abdominal, and back pain (38.2%) and lethargy/ fatigue/ decreased energy (34.2%). The lower prevalence rates of these symptoms in their study compared to ours may be attributed to the use of a different diagnostic tool and a sample with a wider age range of their sample.

Also, the current study revealed that the most common psychological symptoms of PMS were tension and mood swings (91%), loss of concentration, easy crying/ crying spells (89%), anxiety (84%), and irritability (77%). However, Costanian et al. [24] reported angry outbursts (77.4%) and irritability (66.8%) as the most common psychological symptoms in their study and mood swings, forgetfulness, and easily crying were found to be mostly related to PMS. Additionally, Buddhanyakan et al. [34] clarified that angry outbursts (97.7%), anxiety (73.3%), and irritability (68.6%) are the most frequent symptoms. Moreover, Takeda et al. [36] reported anxiety or tension (68.5%), and anger or irritability (70.6%) in PMS patients.

Finally, about the symptoms, the most relevant behavioral symptoms in the present study were impaired work performance (90%), lack of interest in usual activities, and being oversensitive (89%). Also, Abu Alwafa et al. [35] reported a lack of interest (83.4%), easily irritated/ agitated (82.6%), and increased sensitivity toward others (80.9%).

It is important to note that there is no single tool to assess the prevalence of PMS due to the variations in diagnostic criteria, populations investigated, sampling techniques, ethnicity and culture, and standards and methods of data collection used among studies conducted on PMS. These variations result in discrepancies in results, causing variation in the prevalence of

PMS across studies, which makes it challenging to compare the prevalence of PMS and becomes a limitation [37].

The examined sample's rural residence, earlier menarche age, higher BMI, and favorable family history for the mothers and sisters were all substantially related with PMS according to the current study's regression analysis for PMS risk variables. Living in rural areas was strongly linked with having PMS, which is consistent with the findings of Balaha et al. [19] and Shershah et al. [38]. In contrast, research by Triebner et al. [39] found that it was less typical in rural areas. Rural areas may have a higher incidence due to the presence of extra co-factors, societal norms, and unique living conditions.

The current study's findings on the significant relationships between PMS and positive family history for the mothers and sisters were consistent with those of Balaha et al. [19], Erbil et al. [15], and Goker et al. [27], while the findings of Acikgoz et al. [40] were in direct opposition to those of our study. Mother-daughter relationships might be explained by shared biological and/or psychological variables that might have an impact on expectancies and self-awareness.

The current study's findings, which linked earlier menarche ages to the onset of PMS, were in line with earlier research by Balaha et al. [19]; Abu-Hashem et al. [41]; Nisar et al. [30] did not find a link between PMS and menarche age, though. Our study's findings may be explained by earlier menarche ages and regular cycles, which are associated with the early development of ovarian functions and ovulation with fluctuation of steroid hormones at such a young age with less physical and psychological maturity and may cause PMS symptoms [19].

In this study, PMS was significantly correlated to greater BMI; this finding was consistent with those of Balaha et al. [19], Bertone-Johnson et al. [42], and Costanian et al. [24]. Obesity is thought to alter the activity of neurotransmitters through affecting the levels of estrogen and progesterone. Estrogen improves the activity of the neurotransmitters by enhancing serotonin's production, transport, reuptake, receptor expression, and postsynaptic responsiveness. As a result, adiposity-related reduced estradiol levels may cause serotonin function to be compromised and contribute to the development of PMS [42].

The current study has several strengths. It represents one of the few Egyptian studies that investigated the prevalence and severity of PMS and its biopsychosocial symptoms in female physiotherapy students in the Eastern Delta and examined the relationship between various socio-demographic and reproductive factors. Additionally, it used a valid questionnaire for the diagnosis of PMS. Moreover, the large sample size increased the power of the relationships studied.

It's also important to recognize this study's limitations. Firstly, the current study only involved physical therapy students from one academic institution, which limits how broadly the results may be generalized. Secondly, the study's cross-sectional design also makes it impossible for us to assess the longitudinal relationships between any of the investigated predictors and outcomes. Thirdly, the reporting of PMS symptoms was based on participants' retrospective recall, which introduces a recall bias into data collection.

Conclusion and recommendations

The findings of the present study indicate that PMS is a highly common menstrual disorder in female physiotherapy students in the Eastern Delta. Fatigue, cramping in the abdomen, tension, mood fluctuations, and decreased productivity are the most common biopsychosocial symptoms among PMS females. These results need to be confirmed by more studies on a significant sample of the population in order to create strategies for accurately diagnosing and treating PMS in young females.

Therefore, it should be made mandatory for physical therapy students to get counseling and preventive reproductive health treatments as part of their regular clinical experiences. Pro-

grams for educating young Egyptian females about reproductive health can also be carried out in a variety of ways, such as by using cutting-edge technical methods or conventional teaching materials, to cope with the principles of the new republic and achieve the goals of Egypt's Vision 2030, as President Abdel Fattah Al-Sisi supports the empowerment of Egyptian women by launching the National Women's Strategy 2030.

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Acknowledgment

Special thanks go to participants, coordinators, and data reviewers who assisted in the completion of the current study.

Piśmiennictwo/ References

1. Raines K. Diagnosing Premenstrual syndrome. *The Journal for Nurse Practitioners* 2010; 6(3): 224-225.
2. Sawyer SM, Azzopardi PS, Wickremaratne D, Patton GC. The age of adolescence. *Lancet Child Adolesc Health*. 2018; 2(3): 223-228.
3. Algahtani H, Jahrami H. The Experience and Severity of Premenstrual Syndrome among a Saudi Sample using a newly Developed Arabic Language Scale. *The Arab Journal of Psychiatry* 2014; 25(1): 33-39.
4. Roca CA, Schmidt PJ, Altemus M, Deuster P, Danaceau MA, Putnam K, Rubinow DR. Differential menstrual cycle regulation of hypothalamic-pituitary-adrenal axis in women with premenstrual syndrome and controls. *J Clin Endocrinol Metab*. 2003; 88(7): 3057-3063.
5. Moreno MA, Giesel AE, Rogers CB, Clark LR. Premenstrual Syndrome. <http://emedicine.medscape.com/article/953696-overview>, Updated: Feb 19, 2021.
6. Qiao M, Zhang H, Liu H, Luo S, Wang T, Zhang J, Ji L. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in a population-based sample in China. *Eur J Obstet Gynecol Reprod Biol*. 2012; 162(1): 83-86.
7. O'Brien PM. The premenstrual syndrome: A review. *The Journal of Reproductive Medicine* 1985; 30(2): 113-126.
8. Yonkers KA, O'Brien PM, Eriksson E. Premenstrual syndrome. *Lancet*. 2008; 371(9619): 1200-1210.
9. <https://www.statista.com/statistics/1230371/total-population-of-egypt-by-age-group/>
10. Braverman PK. Premenstrual syndrome and premenstrual dysphoric disorders. *J Pediatr Adolesc Gynecol*. 2007; 20: 3-12.
11. Steiner M, Peer M, Palova E, Freeman EW, Macdougall M, Soares CN. The Premenstrual Symptoms Screeninool revised for adolescents (PSST-A): prevalence of severe PMS and premenstrual dysphoric disorder in adolescents. *Arch Women's Ment Health*. 2011; 14(1): 77-81.
12. Arafa AE, Senosy SA, Helmy HK, Mohamed AA. Prevalence and patterns of dysmenorrhea and premenstrual syndrome among Egyptian girls (12–25 years). *Middle East Fertil Soc J* 2018;23 (2018):486-490
13. Gençdoğan B. A new instrument for premenstrual syndrome. *Psychiatry in Turkey* 2006;8:81-87.
14. Padmavathi P, Sankar R, Kokilavani N, Dhanapal K, Ashok B. Validity and Reliability Study of Premenstrual Syndrome Scale (PMSS). *Int. J. Adv. Nur. Management* 2014; 2(1): 04-05.
15. Erbil N, Karaca A, Kiriş T. Investigation of premenstrual syndrome and contributing factors among university students. *Turk J Med Sci*. 2010; 40(4): 565-573.
16. Abdelmoty HI, Youssef MA, Abdallah S, Abdel-Malak K, Hashish NM, Samir D, Abdelbar M, Hosni AN, Abd-El Ghafar M, Khamis Y, Seleem M. Menstrual patterns and disorders among secondary school adolescents in Egypt. A cross-sectional survey. *BMC Women's Health*. 2015; 15: 70.
17. Sahin S, Ozdemir K, Unsal A. Evaluation of premenstrual syndrome and quality of life in university students. *J Pak Med Assoc* 2014; 64(8): 915-922.

18. Adıguzel H, Taskin O, Danacı AE. The symptomatology and prevalence of symptoms of premenstrual syndrome in Manisa, Turkey. *Turkish Journal of Psychiatry* 2007; 18(3): 215-222.
19. Balaha MH, Amr MA, Saleh Al Moghannum M, Saab Al Muhaidab N. The phenomenology of premenstrual syndrome in female medical students: a cross-sectional study. *Pan Afr Med J*. 2010; 5: 4.
20. Seedhom AE, Mohammed ES, Mahfouz EM. Lifestyle factors associated with premenstrual syndrome among El-Minia University students, Egypt. *Hindawi Publishing Corporation ISRN Public Health* 2013; 2013: 1-6.
21. Bakr I, Ez-Elarab HS. Prevalence of premenstrual syndrome. *The Egyptian Journal of Community Medicine* 2010; 28(2): 19-30.
22. Nazzal Z, Hasan N, Al-Sukhon M. Moderate severe premenstrual syndrome and contributing factors among university students in Palestine. *J Communit Med*. 2015; 1(2):1-8.
23. Hussein Shehadeh J, Hamdan-Mansour AM. Prevalence and association of premenstrual syndrome and premenstrual dysphoric disorder with academic performance among female university students. *Perspect Psychiatr Care*. 2018; 54(2): 176-184.
24. Costanian C, Akiki Z, Rabah Z, Daou S, Assaad S. Factors Associated with Premenstrual Syndrome and its Different Symptom Domains among University Students in Lebanon. *Int J Womens Health Wellness* 2018; 4(1):068
25. Tenkir A, Fisseha N, Ayele B. Premenstrual syndrome: prevalence and effect on academic and social performances of students in Jimma University, Ethiopia. *J. Health Dev*. 2003; 17(3): 181-188.
26. Thu M, Diaz EO, Kapaw S. Premenstrual syndrome among female university students in Thailand, AU J. Technol. 2006; 9(3): 158-162.
27. Goker A, Artunc-Ulkumen B, Aktenk F, Ikiz N. Premenstrual syndrome in Turkish medical students and their quality of life. *J Obstet Gynaecol*. 2015; 35(3): 275-278.
28. Direkvand-Moghadam A, Sayehmiri K, Delpisheh A, Kaikhavandi S. Epidemiology of Premenstrual Syndrome (PMS)-A Systematic Review and Meta-Analysis Study. *J Clin Diagn Res*. 2014;8(2):106-109.
29. Tabassum S, Afridi B, Aman Z, Tabassum W. Premenstrual syndrome: Frequency and severity in young college girls. *J Pak Med Assoc*. 2005; 55(12): 546-549.
30. Nisar N, Zehra N, Haider G, Munir AA, Sohoo NA. Frequency, intensity, and impact of premenstrual syndrome in medical students. *J Coll Physicians Surg Pak*. 2008; 18(8):481-484.
31. Takeda T, Koga S, Yaegashi N. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in Japanese high school students. *Arch Women's Ment Health*. 2010; 13(6): 535-537.
32. Matsumoto T, Egawa M, Kimura T, Hayashi T. A potential relation between premenstrual symptoms and subjective perception of health and stress among college students: a cross-sectional study. *Biopsychosoc Med*. 2019;13:26.
33. CAPMAS, 'Working men and women, 2007.
34. Buddhabyakan N, Kaewrudee S, Chongsomchai C, Soontrapa S, Somboonporn W, Sothornwit J. Premenstrual syndrome (PMS) among high school students. *Int J Women's Health*. 2017; 9: 501-505.
35. Abu Alwafa R, Badrasawi M, Haj Hamad R. Prevalence of premenstrual syndrome and its association with psychosocial and lifestyle variables: a cross-sectional study from Palestine. *BMC Women's Health*. 2021; 21(1): 233.
36. Takeda T, Tasaka K, Sakata M, Murata Y. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder in Japanese women. *Arch Women Ment Health* 2006; 9: 209-212.
37. Pinar G, Colak M, Oksuz E. Premenstrual syndrome in Turkish college students and its effects on life quality. *Sex Reprod Health*. 2011; 2(1):21-27.
38. Shershan S, Morrison JJ, Jafarey S. Prevalence of premenstrual syndrome in Pakistani women. *J Pak Med Assoc*. 1991; 41(5): 101-103.
39. Triebner K, Markevych I, Bertelsen RJ, Sved Skottvoll B, Hustad S, Forsberg B, Franklin KA, Holm M, Lindberg E, Heinrich J, Gómez Real F, Dadvand P. Lifelong exposure to residential greenspace and the premenstrual syndrome: A population-based study of Northern European women. *Environ Int*. 2022; 158: 106975.
40. Acikgoz A, Dayi A, Binbay T. Prevalence of premenstrual syndrome and its relationship to depressive symptoms in first-year university students. *Saudi Med J*. 2017; 38(11): 1125-1131.
41. Abu-Hashem H, Amr M, Allam AF, Yousef H, Nemat A. Premenstrual syndrome (PMS) in a sample of Egyptian adolescents. *J Egy Soc Obstet Gynecol*. 2006; 32: 417-418.
42. Bertone-Johnson ER, Hankinson SE, Willett WC, Johnson SR, Manson JE. Adiposity and the development of the premenstrual syndrome. *Women's Health (Larchmt)*. 2010; 19(11): 1955-1962.