



Prevalence of Premenstrual Syndrome and Associated Factors amongst Women Belonging to King Saud University in Riyadh, Saudi Arabia: A Cross-sectional Study

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Abstract

Objectives: The burden of premenstrual syndrome (PMS) is increasing and affects the quality of life of young women. This study aimed to measure the prevalence of PMS and identify the associated factors amongst students and staff belonging to the King Saud University (KSU) in Riyadh city, Saudi Arabia, 2019.

Materials and Methods: This cross-sectional, questionnaire-based study was conducted during 2019 with 409 women (both students and staff), aged 18-30 years belonging to the KSU (female campus), in Riyadh city, Saudi Arabia. The questionnaire comprised sociodemographic information, premenstrual symptoms, smoking, physical activity, and social support. Standard protocols were followed to measure anthropometric indices, including height, weight, hip, and waist circumference. Multivariate logistic regression analysis was conducted to identify the significant factors associated with PMS.

Results: Participants' mean age and body mass index were 22 ± 3.3 years and 24.0 ± 5.3 kg/m², respectively. The mean scores for total symptoms were 6.71 ± 2.81 , ranging from 0 to 12, with more than 90% of women reporting at least one symptom. The physical symptoms were more frequently reported as compared to psychological symptoms. The multivariate regression found that high-level studies (OR= 2.26, 95% CI: 1.31-3.92) and participants reporting income level <10000 Saudi Arabian Riyal (OR= 2.66, 95% CI: 1.40-5.03) were significantly associated with PMS.

Conclusions: A significantly large number of women are suffering from PMS. Lifestyle interventions focusing on body weight and income-generating programs can help decrease premenstrual symptoms. We recommend that national-level studies should be conducted to highlight any urban-rural differences related to PMS.

Keywords: Premenstrual syndrome, Education, Social class, Women, Saudi Arabia

Introduction

Premenstrual syndrome (PMS) is a collection of different emotional symptoms, with or without physical symptoms, related to the menstrual cycle, mainly occurring before menses and causing significant impairment of daily life activities, but usually disappearing with the menstrual flow (1). Its prevalence is reported to be around 30%–40% among the female reproductive population (2). Different studies have reported a wide range of PMS in various countries, with the lowest and highest prevalence reported in France (12%) and Iran (98%), respectively (1,3).

The pathophysiology for PMS suggests that the disorder is related to progesterone production by the ovary (4). In addition, various social and environmental factors have been reported to be associated with PMS, including exercise habits, high-calorie food intake, coffee intake, smoking, alcohol consumption, oral contraceptive use, higher education, major life stressors, family history of

PMS, and a family or personal history of mental illnesses (5, 6). Studies have demonstrated the significant impact of PMS on different aspects of quality of life, including physical, social and mental health (7-9).

Despite the involvement of general health care providers, awareness of PMS symptoms and its risk factors in the general population are still inadequate (10). Due to the increased prevalence of PMS globally, it is considered the most frequent gynecologic complaint among young women. Large-scale studies have mostly been conducted in the west, with limited information available from Saudi Arabia (6,9,10). The rationale for conducting this study is to promote young women's public reproductive and mental health in the local community. The objective of this study was to measure the prevalence of PMS and identify the associated factors in women aged 18-30 years, belonging to King Saud University (KSU) in Riyadh city, Saudi Arabia, in 2019.

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Key Messages

- ▶ Women belonging to the age group 26-30 years are suffering from PMS more compared to 15-25 years.
- ▶ A high level of education creates health awareness in women.
- ▶ A healthy lifestyle based upon improving body weight can lead to a reduction in PMS.

Materials and Methods

This cross-sectional study was conducted in one of the largest female universities, the KSU, located in Riyadh, Saudi Arabia, from October to December 2019. The female campus can accommodate 30 000 students and comprises 12 colleges belonging to different disciplines ranging from computer sciences to business, five health colleges, four humanities colleges, and three science colleges. A team of two medical students and one social scientist was trained to conduct the interviews with women belonging to KSU (female campus). The data collectors were stationed at all major points in the University, such as the main hall, waiting for areas, and the library entrance. They are easily accessible by all the students and the staff. The refusal rate was less than 2%. The inclusion criteria were women aged 18-30 years and those who could read and understand the Arabic language. However, women who were either pregnant, had undergone hysterectomy, or were diagnosed with hormonal problems such as polycystic ovary syndrome/endometriosis or those taking contraceptive pills were excluded from participating in this study. A unique identification number was assigned to each participant to maintain confidentiality, and data was utilized for analysis and research purposes only.

Data Collection Tools

Questionnaire based interviews were conducted with each participant. The questionnaire comprised sociodemographic information, menstrual history, premenstrual symptoms, smoking, and physical activity. Physical activity level was measured by utilizing the International Physical Activity Questionnaire (IPAQ short form) (11). The IPAQ measures all three levels of activity, namely, low, moderate, and vigorous. The questionnaire is validated and has been used by various countries. It includes both the frequency in the number of days per week and the time (in minutes) spent doing that activity. Additionally, an inquiry was made about the average sitting time per day (including both sitting at home and office). Standard protocol procedures were adopted to measure the weight and height. Weight was measured in kilograms using the electronic scale (Seca 220-Hamburg, Germany, 2009), and height was measured in meters using the vertical meter scale. Formula $\text{weight (kg) / height (m}^2\text{)}$ was utilized to calculate the body mass index (BMI) (12).

Questions on Premenstrual Symptoms

The PMS questionnaire utilized in the “Study of Women’s Health Across the Nation” was translated and pretested after taking permission from the authors (13). It comprises 12 symptoms related to physical (abdominal pain, breast pain, swelling of extremities, weight gain, increased appetite, back/muscle pain, headaches, and fatigue) and emotional symptoms (changes in mood, anger, tension, anxiety). Each symptom was phrased in the form of a question inquiring if any specific symptom had occurred during at least half of your menstrual periods or in the week before them in the last year. If a participant answered yes to any of the symptoms, she was further asked: Did this sign/symptom usually (more than half of the time) disappear within 1-3 days after the onset of periods? Additionally, two questions on increased and decreased sexual interest were inquired for from married women only.

Social Support Scale

A four items scale was utilized to measure the availability of social support (14). Two items measure emotional support, and to measure tangible support. The Likert Scale responses are and included social support available all the time, most of the time, and some/none of the time. The dichotomous variable was developed by adding responses for support available all the time and most of the time and coded as “0”. The answer “support available some/ none of the time was coded as “1”.

Sample Size

Based on the estimated prevalence of 60%, 95% confidence interval, and alpha level at 0.05 significance level, we needed to interview 369 women. To explore the association between sociodemographic, physical activity, smoking, and social support with PMS, assuming a type - I error of 0.05, type-II error of 0.20 (power of 0.80), and 40% difference in the presence of PMS due to the above-mentioned factors, the sample size was estimated to be minimum of 420.

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (IBM SPSS statistics version 21.0). Percentages/proportions and mean values with standard deviation were calculated for categorical and continuous variables, respectively. The outcome variable, the PMS scores, were converted to categorical variable. The sum of all the items (mentioned as yes) were calculated, and the average score, that is 4.00 was taken as cutoff point, to formulate the binary variable for the logistic regression analysis. Women with a score of 4 or more were labeled as having PMS and coded as “1”, vs. those having mild or no PMS and coded as “0”. Univariate analysis was conducted to estimate the unadjusted odds ratio and 95% confidence interval (CI). The variables which were significant on univariate analysis and were potential confounders or

caused a >10% change in the estimates were entered in the multivariate model to calculate the adjusted odds ratio with 95% CI. The final model was developed after checking for all plausible interactions. The significance was kept at $P < 0.05$. The model fit was assessed by the Hosmer-Lemeshow test.

Results

A total of 420 interviews were conducted, of which 11 were incomplete and excluded from the study. Finally, 409 interviews were analyzed. The mean and standard deviation for the total score of premenstrual symptoms was 6.71 ± 2.81 , ranging from 0 (no symptom) mentioned by 11 women (12.7%) to a maximum score of 12 mentioned by 7 women (1.7%). Based on cut-off at a mean score of 4 or more, about 80% of women suffered from PMS. The physical symptoms were more frequently reported as compared to psychological symptoms. Two symptoms related to sexual interest were reported by only 3% to 4% of women. Menstrual history found that the majority of the women had menarche at age between 12-14 years, whereas one-fifth had menarche at age ≤ 11 years and remaining at the age of ≥ 15 years. Most of the women reported a regular cycle with an interval ranging between 24 to 35 days, and around 20% reported short menstrual cycle (<24 days in between). A significant number of women reported irregular intervals between two menstrual cycles.

Abdominal pain was the most frequently reported symptom mentioned by majority of the women, whereas swelling of the extremities was the least reported symptom (Table 1). Figure 1 shows the comparison in the reporting of symptoms by age categories 15-25 years and >25 years. According to our results, all symptoms were significantly reported more frequently by age group 26-30 years (7.66 ± 2.96) compared to the age group 18-25 years (6.39 ± 2.72). A significant difference was observed in reporting

Table 1. Frequency of Premenstrual Symptoms in the Study Participants (n = 409)

Premenstrual Symptoms	Number	Percent
Abdominal pain	344	84.1
Breast pain	209	51.1
Swelling of extremities	62	15.2
Weight gain	231	56.5
Changes in mood	286	69.9
Anger aggressiveness	285	69.7
Tension irritability	232	56.7
Increase in appetite	179	43.8
Anxious jittery	281	68.7
Back joint pain	268	65.5
Headache	109	26.7
Fatigue tire easily	257	62.8
Less sexual interest	13	3.2
More sexual interest	17	4.2

of swelling of extremities, headache, weight gain, fatigue, and unrest.

The mean age of women in this study was 23.18 ± 4.05 years, ranging from 18 to 40 years. The Pearson correlation coefficient found a significant correlation between age and PMS ($r = 0.212, P < 0.001$). Table 2 presents the univariate analysis between sociodemographic characteristics and PMS. The majority of the women were single and belonged to the College of Humanities (45%), followed by the College of Science (31%), the College of Medicine (31%), and the College of Community Studies (4%). Women aged 26-30 years were at higher odds for reporting physical and psychological symptoms. Students with graduate level or above reported the PMS more frequently than the undergraduates. Similarly, women reporting a monthly

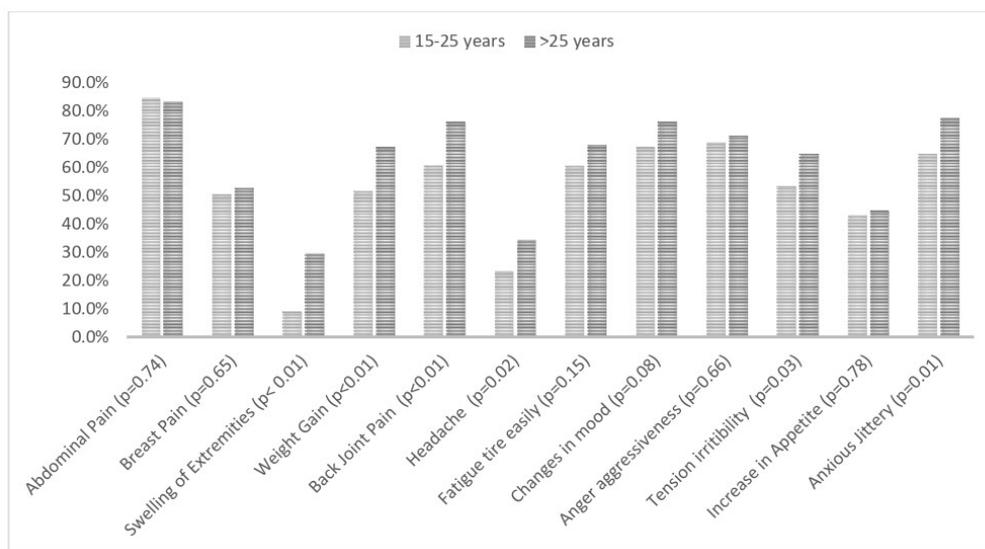


Figure 1. Frequency of Female Participants Reporting Premenstrual Symptoms by Age Groups Belonging to King Saud University, Riyadh, Saudi Arabia.

income of <10,000 Saudi riyals (SAR), were at higher odds for reporting PMS. Only 4% of women reported that they were current smokers, and it was not significantly associated with PMS ($P=0.21$). The majority of women reporting ≥ 10000 SAR as monthly household income belonged to the age category 15-25 years, whereas <10000 SAR was more frequently mentioned by 26-30 years-old women ($P<0.001$).

Anthropometric measurements found significant differences between BMI and PMS and between age categories. Significant positive Pearson correlation coefficient was observed between BMI and PMS ($r = 0.12$, $P=0.02$); and between BMI and age ($r = 0.34$, $P<0.001$). The categories found that mean (SD) BMI of the women

with PMS was significantly higher in comparison to the other group (24.66 ± 5.11 vs. 23.22 ± 5.72 , $P=0.02$) respectively. Similarly, the BMI of participants in the age group 26-30 years was statistically significantly higher than those belonging to the 15-25 years age category (26.53 ± 5.48 vs. 23.39 ± 4.90 , $P<0.001$). The majority of the women perceived their health as excellent or good, which was not associated with PMS. Younger-age women reported positive family history for PMS more frequently than those 26-30 years old.

Amongst different physical activity levels, moderate level activity was most frequently reported. Women 26-30 years reported longer activity duration than women between 15-25 years age category. Whereas walking

Table 2. Sociodemographic Characteristics of Study Participants in Two Groups of With and Without PMS (n=409)

Variables	Total	With PMS (n=322)	Without PMS (n=87)	Unadjusted odds ratio (95%CI)
Age (y)				
15-25	284 (69.4)	213 (66.1)	71 (81.6)	1.0
26-30	125 (30.6)	109 (33.9)	16 (18.4)	2.27 (1.26-4.09)
Marital status				
Single	353 (86.3)	275 (85.4)	78 (89.7)	1.0
Married	56 (13.7)	47 (14.6)	9 (10.3)	1.48 (0.69-3.17)
The educational level				
Diploma/Undergraduate	103 (25.2)	69 (21.4)	34 (39.1)	1.0
Graduate or above	306 (74.8)	253 (78.6)	53 (60.9)	2.35 (1.42-3.90)
Participant's occupation				
Student	345 (84.4)	270 (83.9)	75 (86.2)	1.0
University employee/Faculty	64 (15.6)	52 (16.1)	12 (13.8)	1.20 (0.61-2.37)
Household monthly income (SAR)				
>20000	136 (33.3)	97 (30.1)	39 (44.8)	1.0
10000-20000	123 (30.1)	96 (29.8)	27 (31.0)	1.43 (0.81-2.52)
<10000	150 (36.6)	129 (40.1)	21 (24.2)	2.47 (1.36-4.46)
Type of housing				
Villa	262 (64)	203 (63.0)	59 (67.8)	1.0
Apartment	93 (22.7)	75 (23.3)	18 (20.7)	1.21 (0.67- 2.18)
Small house	54 (13.3)	44 (13.7)	10 (11.5)	1.28 (0.61-2.69)
Ownership of house				
Personally owned	276 (67.5)	215 (66.7)	61 (70.1)	1.0
Rented	109 (26.7)	90 (28.0)	19 (21.8)	1.34 (0.76-2.38)
Government owned	24 (5.8)	17 (5.3)	7 (8.0)	0.68 (0.27-1.73)
Smoking*				
No	393 (96.1)	307 (95.3)	86 (98.9)	1.0
Yes	16 (3.9)	15 (4.7)	1 (1.1)	4.20 (0.55-32.26)
Anthropometric Measurements				
Body mass index (kg/m²)				
Normal (<25.0)	257 (62.8)	195 (60.6)	62 (71.3)	1.0
Overweight/Obese (≥ 25.0)	152 (37.2)	127 (39.4)	25 (28.7)	1.61 (1.0-2.70)
Perceived health				
Excellent	133 (32.5)	102 (31.7)	31 (35.6)	1.0
Good	216 (52.8)	171 (53.1)	45 (51.7)	1.15 (0.68-1.94)
Fair/Poor	60 (14.7)	49 (15.2)	11 (12.6)	1.35 (0.63-2.92)
Family history of PMS				
No	360 (88)	283 (87.9)	77 (88.5)	1.0
Yes	49 (12)	39 (12.1)	10 (11.5)	1.06 (0.51-2.23)

Data are expressed as n (%).

PMS: Premenstrual syndrome.

for ≥5 days per week was more frequently reported by women aged 15-25 years . Although the participants more frequently reported moderate-level activity, there was no significant age difference ($P=0.23$). Similarly, sitting for longer than 7 hour was more frequently reported by women aged between 15-25 years. However, no significant difference was observed compared to those aged 26-30 years ($P=0.34$). Table 3 is also showing the availability of emotional and tangible social support. The frequency reported for emotional support availability was less than tangible support respectively. However, no significant

association was observed between emotional/tangible social support and PMS.

Table 4 shows the multivariate logistic model showing significant factors associated with PMS. In the model, high level of education (graduates and postgraduates $AOR=2.26$, 95% CI: 1.31-3.92) and participants reporting low income level <10 000 SAR ($AOR=2.66$, 95% CI: 1.40-5.03) were significantly associated with PMS. The model was adjusted for age, BMI, physical activity, and social support.

Table 3. Physical Activity and Social Support of Study Participants (n=409)

Variables	Total	With PMS (n=322)	Without PMS (n=87)	Unadjusted Odds Ratio (95% CI)
Days with vigorous activity				
≥5 days/week	24 (5.9)	19 (5.9)	5 (5.8)	1.0
1-4 days/week	81 (19.8)	68 (21.1)	13 (14.9)	1.38(0.44, 4.35)
0 days/week	304 (74.3)	235 (73.0)	69 (79.3)	0.89(0.32, 2.49)
Duration for vigorous activity (n=105)				
>60 minutes	23 (21.9)	20 (23.0)	3 (16.7)	1.0
30-60 minutes	23 (21.9)	19 (21.8)	4 (22.2)	1.54 (0.81, 2.94)
<30 minutes	59 (56.2)	48 (55.2)	11 (61.1)	1.37 (0.74, 2.54)
Days with moderate activity				
≥5 days/week	79 (19.3)	58 (18.0)	21 (24.2)	1.0
1-4 days/week	153 (37.4)	124 (38.5)	29 (33.3)	1.55 (0.51, 2.57)
0 days/week	177 (43.3)	140 (43.5)	37 (42.5)	1.68 (0.77, 3.67)
Duration for moderate activity (n=232)				
>60 minutes	57 (24.6)	42 (23.1)	15 (30.0)	1.0
30-60 minutes	72 (31)	55 (30.2)	17 (34.0)	1.55 (0.51, 2.57)
<30 minutes	103 (44.4)	85 (46.7)	18 (36.)	1.68 (0.77, 3.67)
Days with walking activity				
≥ 5 days/week	241 (58.9)	187 (58.1)	54 (62.1)	1.0
1-4 days/week	152 (37.2)	121 (37.6)	31 (35.6)	1.13(0.68,1.85)
0 days/week	16 (3.9)	14 (4.3)	2 (2.3)	2.02(0.45, 9.17)
Duration with walking (n=393)				
>60 minutes	161 (41)	124 (40.3)	37 (43.5)	1.0
30-60 minutes	107 (27.2)	86 (27.9)	21 (24.7)	1.22(0.67, 2.23)
<30 minutes	125 (31.8)	98 (31.8)	27 (31.8)	1.08(0.62, 1.90)
Sitting time (at home and office during any week)				
≤7 hours	298 (72.9)	235 (73.0)	63 (72.4)	1.0
>7 hours	111 (27.1)	87 (27.0)	24 (27.6)	0.97(0.57, 1.65)
Social Support				
Someone to listen/and talk to				
All of the time	120 (29.3)	96 (29.8)	24 (27.6)	1.0
Most of the time	115 (28.1)	91 (28.3)	24 (27.6)	0.95(0.50, 1.79)
Some or none of the time	174 (42.5)	135 (41.9)	39 (44.8)	0.87(0.49, 1.53)
Someone to take you to the doctor				
All of the time	191 (46.7)	152 (47.2)	39 (44.8)	1.0
Most of the time	88 (21.5)	63 (19.6)	25 (28.7)	0.65(0.36, 1.16)
Some or none of the time	130 (31.8)	107 (33.2)	23 (26.5)	1.19(0.67, 2.11)
Someone to discuss problems				
All of the time	132 (32.2)	106 (32.9)	26 (29.9)	1.0
Most of the time	101 (24.7)	77 (23.9)	24 (27.6)	0.79(0.42, 1.47)
Some or none of the time	176 (43)	139 (43.2)	37 (42.5)	0.92(0.52, 1.61)
Someone to help with daily chores				
All of the time	181 (44.3)	145 (45.0)	36 (41.4)	1.0
Most of the time	97 (23.7)	76 (23.6)	21 (24.1)	0.89(0.49, 1.65)
Some or none of the time	131 (32)	101 (31.4)	30 (34.5)	0.84(0.45, 1.44)

Data are expressed as n (%).
PMS: Premenstrual syndrome.

Table 4. Multivariate Logistic Regression of Sociodemographic Variables and the Premenstrual Syndrome

Variables	AOR	95% CI
Age (y)		
15-25	1.0 (Ref)	
26-30	1.42	0.75, 2.69
The educational level of participant		
Undergraduate/diploma	1.0 (Ref)	
Graduate or above	2.26	1.31, 3.92
Household monthly income (SAR)		
>20000	1.0 (Ref)	
10000-20000	1.48	0.82, 2.66
<10000	2.66	1.40, 5.03
Body Mass Index (kg/m ²)		
Normal (<25.0)	1.0 (Ref)	
Overweight/obese (≥25.0)	1.22	0.70, 2.13
Days with moderate activity		
≥5 days	1.0 (Ref)	
1-4 days	1.62	0.82, 3.21
0 days	1.24	0.65, 2.37
Tangible social support		
All of the time	1.0 (Ref)	
Most of the time	0.63	0.34, 1.16
Some or none of the time	1.20	0.66, 2.18

AOR, Adjusted odds ratio.

Discussion

The study found that majority of women are suffering from PMS and factors such as high education and low socioeconomic status are associated with it (15,16). One of the reasons for high prevalence may be the increase in the awareness about PMS by the social and electronic media, thus encouraging more women to identify and report the PMS.

PMS comprises several physical and psychological symptoms with varying degrees (15). One of the previous studies reported that muscle, joint, abdominal, and back pain were the third most common reported symptom after depressed mood and lethargy (16). Similarly, an International study on the symptoms, types and severity of PMS found that abdominal pain and tenderness were amongst the most commonly reported symptoms (15). The physiologic increase in the production of PGF₂-alpha results in stronger uterine contractions, which radiates pain to the lower abdomen and pelvic region, explaining the pain in the lower half of the body (7).

Different studies have reported age as the most commonly associated factor with PMS. The general finding is that younger women are the most affected; however, we found that women between 26 to 30 years reported more symptoms. Perhaps cultural barriers restrict the younger women from reporting personal health issues, especially

problems like PMS, thus explaining the difference in age groups (16). In addition, it is suggested that an increase in age and family responsibilities is associated with an increase in stressors and thus, resulting in a higher risk for the presence of PMS (17).

Furthermore, the finding for higher education and PMS is in accordance with past studies that have proved a significant correlation between educational status and the PMS (18,19). This may be attributed to the increased level of awareness in the higher educated group, which allowed these women to follow available guidelines for reporting their symptoms. The association between low socioeconomic status and PMS contradicts previous studies that showed no significant relationship between household income and PMS (20). This finding can be attributed to unmet needs and increased physiological and psychological stress, aggravating PMS (21).

PMS is associated with depressive symptoms, especially among young female students (22,23). In support of our results, previous studies have also found increased emotional symptoms, including anxiety and depression (24,25). This is also explained by the varying estrogen and progesterone levels and decreased serotonin levels during the premenstrual period. Furthermore, a positive correlation has been reported between premenstrual mood symptoms and increased levels (specifically >3 mg/dL) of the sensitive inflammatory marker, namely, C- reactive protein, emphasizing the relationship between inflammation and PMS (26). In support of previous studies (27-29), this study also found association between increased BMI and PMS on univariate analysis. A study conducted amongst students showed that 82% of those reporting PMS were significantly associated with lifestyle factors, including physical activity and obesity (30). These results can be explained by the increase in adiposity contributing towards a decrease in progesterone levels, resulting in impairment of gamma-aminobutyric acid function and occurrence of emotional PMS symptoms (31). Exercise is reported to have a beneficial effect on the PMS (32,33). An aerobic exercise regimen is known to increase heart rate and bone density while reducing stress levels and thus, can reduce PMS (34,35). However, further studies are still required to explore whether losing weight and increasing physical activity will help in reducing PMS. We also failed to establish an association between social support and PMS. However, another specific study observed the relationship between low levels of maternal support and increased PMS Symptoms (36). Even though these results could be due to the influence of poor social support on depression and anxiety, which could have been mistaken for a PMS symptom, further research is required in Saudi Arabia to make a definitive conclusion about the association between social support and PMS. A study conducted in Egypt detected PMS symptoms in 93% of female students with a positive family history of PMS compared to 76% who did not have a family history

of PMS (29). It is important to address the PMS problem by designing appropriate health policies and programs. Health care and social workers can play a significant and influential role in implementing these programs.

Study Strengths and Limitations

The results of our study can be generalized to women outside KSU as students and staff in KSU are from different regions of Saudi Arabia. This study has explored all important factors comprehensively and included all social classes. Regardless, there are some limitations, such as this study was a cross-sectional study hence temporal association cannot be established. Similarly, information bias cannot be ruled out.

Conclusions

Our study found a high prevalence of PMS among women in Saudi Arabia. A healthy lifestyle focusing on body weight and income-generating programs can help in decreasing premenstrual symptoms. The immense difference in PMS prevalence by location and cultural differences needs to be further investigated internationally to devise a solution for this psycho-neuro endocrinal disorder. Future large-scale studies can help in recommend interventions to prevent premenstrual symptoms in young Saudi women.

Author's Contribution

LAA and ASA were involved in the design, acquisition, and analysis of data. ZK was involved in the data analysis, drafting and critical revision of the manuscript. AK was involved in the acquisition, analysis, and interpretation of data. JAQ had full access to all of the study data, designed the study, and critically revised the manuscript for important intellectual content. All authors approved the final manuscript and take responsibility for the integrity of the data.

Conflict of Interests

All authors declare no competing or conflict financial interests.

Ethical Issues

This study was approved by the Ethical Review Committee, KSU, Riyadh, Saudi Arabia (Code: No: E-19-3877). Ethical guidelines were followed by obtaining informed signed consent before the interviews, and complete confidentiality was maintained during the data collection and measurements.

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