The frequency of premenstrual syndrome (PMS) and its association with body mass index (BMI) in female students attending universities in Iraq

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Abstract

Premenstrual syndrome, or PMS, is a common issue that impairs the performance and quality of life of young women. It is characterized by the onset of cyclical emotional, psychological, and physical symptoms that subside once menstruation has ended and start during the luteal (premenstrual) phase of the menstrual cycle. The Body Mass Index (BMI) is a tool for identifying weight categories that could make medical conditions worse.

Body mass index (BMI) may have an impact on premenstrual syndrome (PMS). This cross-sectional study sought to determine how common PMS symptoms were among female students at several Iraqi colleges, as well as how they related to body mass index.

The study included 295 female students who were chosen at random through of the period from of 10 march 2023 to 10 July 2023. Premenstrual Scale - Short Form (PMS-SF) was used for PMS assessment and Body Mass Index Questionnaire-Short Form (BMIQ-SF) was used to assessment BMI. Data was analyzed using Chi-square testing and one-way ANOVA using SPSS software version 23.

Results : The research results indicate that the majority of female students—249 (84.4%) out of 295 samples—have PMS frequency, with only 46 (15.6%) being free of the condition. In light of the BMI measurements on 295 cases, we found that both weight reduction and weight gain have a greater impact on PMS. Among the 48 underweight cases, 38 (80%) were positive, while only 10 (20%) was negative. and among the 153 overweight cases, 137 (90%) had a positive impact on PMS, whereas 16 (10%) had a negative impact.

Conclusion : Research findings indicated a relationship between the relatively high prevalence of PMS syndrome and body mass index (BMI).

Introduction

The uterine lining must regenerate in order for a woman to prepare for pregnancy, and every woman undergoes menstruation on a regular basis. The term PMS refers to a group of symptoms that often start the week prior to the menstrual cycle and intensify in the final week of the luteal phase. These signs and symptoms could be physical, emotional, or behavioral.[1]

For women who are of reproductive age, One of the most frequent disorders is premenstrual syndrome (PMS) that can cause significant disruptions to daily activities[2]. PMS symptoms that are frequently experienced include mood swings, depression, irritability, headaches, cramping in

the abdomen, bloating in the abdomen, breast swelling and tenderness, and changes in appetite.[3][4]

Concerning the genesis of PMS, numerous explanations have been proposed. The majority of these theories, meanwhile, have not yet been validated or established by science [5]. Both sociodemographic and psychological factors have been linked to PMS [6]. Additionally, it was discovered that BMI affected the occurrence of PMS [7][8], however a different study revealed no connection between women's BMI and periods [9].

Through a number of hormonal, neurological, and behavioral pathways, obesity may also be linked to PMS. Several studies have revealed that women who experience menstruation symptoms or PMS are more expected to be obese or overweight than those who do not. Although PMS does not actually pose a threat to life, it can drastically lower many women's quality of life and have a negative impact on their productivity and mental well-being [10][11].

A person's height and weight are used to calculate their body mass index (BMI), which is a measurement of their overall form. It is generally accepted that the BMI is a useful tool for determining a healthy body mass index.[11][12]

A person is considered extremely underweight if their BMI is less than 16.5. If it falls between 16.5 and 18.4, it is deemed underweight; if it falls between 18.5-24.9, it is deemed normal. While 25–30 is considered overweight, class I obesity is defined as 30-35, class II obesity as 35–40, and class III obesity as over 40.[12]

The study's goal is to assess the relationship between BMI and PMS symptoms, as well as to identify aggravating and mitigating factors.

Materials and methods

Study design

The study depended cross-sectional design for period from March to July 2023 . 295 female students were randomly accepted from various faculties throughout various university sites in Iraq to sign the consent form and participate in the study.

Female university students who wished to participate in the study had to fill out a self-administered structured questionnaire that included questions about eating habits, biographical information, and the validated Depression, Anxiety, and Stress Scale (DASS-21) questionnaire [13]. The body weight (kg) of the subjects was divided by the square of their height (m) to determine their body mass index (BMI) (kg/m2).[14]

Algahtani and Jahrami (2014) developed and validated an A-PMS diagnostic instrument to assess the frequency and severity of PMS symptoms[15]. The twenty-three questions about PMS symptoms in this tool were sorted into three categories: psychological (poor mood, hopelessness, guilt, worry/anxiety, emotional labiality, increased sensitivity to others, anger, easily agitated/irritated, lack of interest,

difficulty focusing, loss of control, feeling overwhelmed)[16]; Behavioral symptoms include those that interfere with relationships, academic performance, or daily routines; physical symptoms include fatigue, engorgement, lethargy, food cravings, hypersomnia, insomnia, headaches, muscle, joint, abdomen, and back pain, and acne.[17]

Statistical analysis

The data was coded and analyzed using SPSS (Statistical Package for Social Sciences), version 23. Continuous and categorical variables were analyzed using descriptive and frequency approaches, respectively. One-way ANOVA and Chi-square testing were used to determine the relationship between eating habits, PMS symptoms, and sociodemographic characteristics. Univariate and multivariate simple linear regression analyses were used to investigate the relationships between PMS symptoms, psychosocial status, and hours of physical activity. The relationship between BMI, psychosocial status parameters, and PMS symptoms was investigated using multiple linear regression and Pearson correlation tests.

Results

In regard the relation between BMI and PMS the study was carried out on (295) cases in age range between(19-25) years and most of 23 years females students registered as high percentage of data participated. As show in Figure 1 we found 84% of females precipitating in study complains from PMS and only 16% free from them.

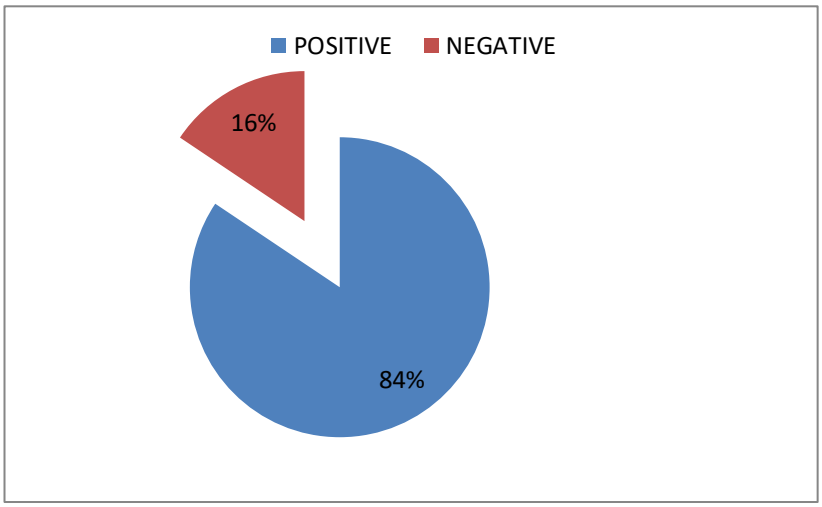

Figure 1. The percentage of PMS among cases

Table 1. BMI's impact on PMS

Weight effect	Positive effect	Negative effect
Under weight (16.5- 18.4 kg/m2)	38 (80%)	10 (20%)
Normal weight (18.5-24.9 kg/m2)	27 (29%)	67 (71%)
Over weight (25-30 kg/m2)	137 (90%)	16 (10%)

As indicated by Table 1, 80 % of underweight girls and 90 % of overweight girls showed signs of PMS, respectively, whereas 67 % of normal weight girls did not display any signs

Discussion

Our study's average population results revealed that 59% of participants experienced moderate-to-severe PMS symptoms. In terms of the prevalence, a study conducted in 2001 found that 14% of women had PMS [18]. However, a 2019 study of students revealed that over 50% of participants had PMS, which significantly lowers quality of life [19].

Our investigation found that the PAF case and control groups had significantly different body mass index (BMI) averages. The study's goal was to investigate the connection between BMI and PMS symptoms. Based on the results of their investigation, we concluded that more severe PMS symptoms were associated with higher BMI levels .

Numerous research findings published in international publications [20, 21] corroborate the conclusions of our investigation.

The study's strength lies in encouraging students to possess a deeper understanding of the human body's physiology and its periodic hormonal fluctuations, making them more adept at recognizing the effects of these changes. This study's primary limitation is that, although it was conducted to determine whether there was a correlation between BMI and PMS, the participants' past medical histories and treatment histories, as well as their varying food and exercise preferences and levels, were not taken into account.

Conclusion

PMS was observed in 84% of the study group, with 59% of students having a high BMI. Menarche occurred at a later age among those with a larger BMI deviation, and there was a strong link between BMI and PMS. Because PMS is a frequent condition that can interfere with a woman's everyday activities, keeping a normal BMI should be included as one of the controllable risk factors in PMS management.

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Participants' consent and ethics approval

The Al-amal College for Specialized Medical Sciences' institution review board granted approval for this study (number 1/2323). Written consent was given voluntarily and informed at the outset of the questioning. Consent was signed by study participants who were willing to take part. The researcher also explained the goals of the study to the participants verbally. Every participant was older than eighteen. There was no promotion or reward offered. The study's methodologies were applied in compliance with all applicable laws and rules. All information was handled with confidentiality and was utilized exclusively for research.

Competing interests

The authors declare they have no competing interests.

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