



ASSOCIATION OF PREMENSTRUAL SYNDROME WITH PROCESSED FOOD CONSUMPTION AND STRESS SCORES IN FEMALES AGED 18-35 YEARS

Home Science

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ABSTRACT

Premenstrual syndrome (PMS) affects many women globally, causing various physical and emotional symptoms. Understanding how lifestyle factors like processed food consumption and stress influence PMS severity is crucial for effective management. Research in this area, particularly among Indian women, remains limited. This study aims to explore the association of PMS with processed food intake and stress scores among females aged 18 to 35 years. Identifying modifiable risk factors could lead to targeted interventions, improving the quality of life for women affected by PMS. 150 participants were included using convenience sampling. Premenstrual symptoms were assessed with the Premenstrual Symptoms Screening Tool (PSST). Processed food intake was evaluated using a screening questionnaire for highly processed food consumption (sQHPF), a 3-day dietary recall, and a food frequency questionnaire. Stress scores were assessed using the Perceived Stress Scale (PSS). Results showed significant associations between demographics and PMS likelihood. Higher stress levels were significantly associated with more severe PMS symptoms, while processed food consumption showed no significant differences.

KEYWORDS

Premenstrual Syndrome, PMS severity, Processed Food Consumption, Dietary Intake, Stress

INTRODUCTION

Premenstrual Syndrome (PMS) is a common clinical condition characterized by a range of physical and emotional symptoms that occur in the luteal phase of the menstrual cycle and is defined by the American College of Obstetrics and Gynecology as a condition marked by recurrent episodes of symptoms that consistently coincide with the menstrual cycle, significantly disrupting specific aspects of life (Siminiuc et al., 2023; Thakur et al., 2022). The impact of PMS is profound, often leading to mental health challenges, physical discomfort, and social and professional disruptions (Elvan et al., 2023).

The exact etiology of PMS remains unclear, but it is widely believed that hormonal fluctuations, particularly in progesterone and estrogen, play a crucial role (Dinh Trieu Ngo, 2023). Additionally, lifestyle factors such as diet and stress have been increasingly recognized as influential in the severity and occurrence of PMS symptoms (Ghosh et al., 2022). Processed food consumption and stress are suspected to exacerbate PMS symptoms, yet research examining these associations, especially among Indian women, remains limited (Siminiuc et al., 2023).

This study aimed to explore the relationship between PMS severity, processed food intake, and stress levels among women aged 18 to 35 years.

METHODOLOGY

A cross-sectional study design was used, targeting females aged 18-35 years residing in Mumbai. A total sample size of 150 participants was recruited using a convenience sampling technique. The inclusion criteria required participants to have a regular menstrual cycle, be within the specified age range, and provide informed consent. Exclusion criteria included recent medical or psychological problems, pregnancy or lactation, use of oral contraceptives or hormone replacement therapy, thyroid dysfunction, polycystic ovary syndrome, and incomplete questionnaire responses. The study spanned 3 months, and ethical approval was obtained from the Inter System Biomedical Ethics Committee (ISBEC).

Data collection was done after obtaining informed consent. A structured questionnaire was used to gather demographic, anthropometric and medical information. PMS symptoms were assessed by Premenstrual Symptoms Screening Tool (PSST), processed food consumption was estimated using 3-day 24-hour dietary recall, FFQ and short screening questionnaire for Highly Processed Food consumption (sQ-HPF) and stress scores were analyzed using Perceived Stress Scale (PSS). Data analysis was conducted using SPSS software.

RESULTS AND DISCUSSION

Premenstrual Syndrome Severity

Among participants, 52% experienced no/mild PMS ($n=78$), 36.7% had moderate to severe PMS ($n=55$), and 11.3% had PMDD ($n=17$). The prevalence of PMS in an Indian study was 43% among women of reproductive age, with even higher rates among adolescents (Dondapati et al., 2023).

Significant differences in symptom severity were observed across all groups ($p<0.05$), with PMDD participants showing notably more severe symptoms, including anger, anxiety, tearfulness, and depression. Functional impairments were also significantly higher in PMDD, affecting productivity, relationships, social life, and home responsibilities ($p<0.05$). Anger/irritability emerged as the most prevalent PMDD symptom affecting 97.4% of individuals (Daşkan et al., 2020); whereas depressed mood, anger/irritability, and anxiety/tension as prevalent symptoms in other study (Dondapati et al., 2023).

Demographic Details

A significant difference was observed between demographic characteristics and PMS/PMDD severity. Most participants (86%) were aged 18-23: 98.7% reported no/mild PMS, 67.3% moderate to severe PMS, and 88.2% PMDD. A study similarly observed a higher prevalence of PMS in young women (18-25 years) compared to older age groups (Ghosh et al., 2023).

Single individuals (77.3%) reported 91% no/mild PMS, 58.2% moderate to severe PMS, and 76.5% PMDD. A similar study identified being single as an independent predictor associated with PMS (Alkhamis et al., 2021). Participants with an HSC (51.3%) reported 55.1% no/mild PMS, 50.9% moderate to severe PMS, and 35.3% PMDD.

Non-vegetarians (68.7%) showed significant associations with PMS/PMDD: 57.7% no/mild PMS, 80% moderate to severe PMS, and 82.4% PMDD. The finding of a study that found a significant association between food preference and PMS/PMDD severity suggested that lacto- or ovo-vegetarian diets could be more effective at reducing PMS symptoms compared to non-vegetarian diets (Thakur et al., 2022).

Anthropometric Measurements

Among participants with no/mild PMS ($n=78$), the mean weight was $51.53 \text{ kg} \pm 8.735$, mean height $158.00 \text{ cm} \pm 6.316$, and mean BMI $20.69 \text{ kg/m}^2 \pm 3.661$. For moderate to severe PMS ($n=55$), the mean weight was $54.34 \text{ kg} \pm 11.193$, mean height $164.47 \text{ cm} \pm 46.632$, and mean BMI $21.37 \text{ kg/m}^2 \pm 4.756$. Those with PMDD ($n=17$) had a mean weight of $54.00 \text{ kg} \pm 7.889$, a mean height of $156.18 \text{ cm} \pm 10.315$, and a

mean BMI of $22.20 \text{ kg/m}^2 \pm 3.026$. These findings are consistent with previous research, which found no correlation between PMS severity and body mass index (Ghosh et al., 2023).

Processed Food Consumption

Participants across PMS severities showed similar energy intake levels, with means ranging from 1402.41 to 1417.71 kcal, and no significant differences were found ($p = 0.945$). Likewise, protein, carbohydrate, and fat consumption did not significantly differ between groups ($p = 0.760$, $p = 0.709$, $p = 0.797$, respectively). However, all groups consumed more than the recommended levels of carbohydrates and fats. Similar results were found that both PMS and non-PMS groups consumed less food than the recommended daily allowance (Bazyar et al., 2017).

For fatty dairy products, sugary dairy products, cured meat, fats, fermented alcohol, and distilled alcohol, there were no significant differences in consumption between groups ($p > 0.05$). However, sugary drinks showed a significant difference ($p = 0.029$), with a higher percentage in the PMDD group (82.4%). Other items, like sweets, snacks, ready-to-eat foods, refined cereals, sauces, additives, and fried food, also showed no significant differences in consumption across groups ($p > 0.05$). Overall, while sugary drinks varied among PMS/PMDD severities, most highly processed food items did not differ significantly in consumption. Studies also found significant correlations between PMS severity and consumption of sugary items, indicating a potential influence on dietary habits (Helmy et al., 2023).

Among street food items, samosas were consumed weekly by 27.3% of respondents, while donuts were consumed at the same frequency by 29.3%. Chocolate, burgers, and wraps were also consumed weekly by 24.0% to 26.0% of respondents. For beverages, herbal tea and tea were daily staples for 41.3% and 38.7% of respondents, respectively. In contrast, alcohol was never consumed by 63.3% of individuals. Some studies found an association between PMS symptoms and dietary habits, including consumption of sugary items and fast food, fried items, and processed foods (Qureshi et al., 2023).

Perceived Stress

Among participants, 8.7% ($n=13$) reported low stress: 14.1% in the No/Mild PMS group, 3.6% in the Moderate to Severe PMS group, and none in the PMDD group. Most participants (80.7%, $n=121$) reported moderate stress: 78.2% in No/Mild PMS, 89.1% in Moderate to Severe PMS, and 64.7% in PMDD. High stress was reported by 10.7% ($n=16$): 7.7% in No/Mild PMS, 7.3% in Moderate to Severe PMS, and 35.3% in PMDD. There was a significant association between stress levels and PMS categories ($p = 0.001$), suggesting a link between stress perception and PMS severity. A study suggested a link between stress and the intensity of premenstrual symptomatology among college students (Matsumoto et al., 2019).

Table–1 PMS Severity and Stress

Perceived Stress Level	No/Mild PMS (%) ($n=78$)	Moder-ate to Severe PMS (%) ($n=55$)	PMDD (%) ($n=17$)	Chi-Square	P value
Low	14.1	3.6	0	17.72	0.001
Moderate	78.2	89.1	64.7		
High	7.7	7.3	35.3		

CONCLUSIONS

In conclusion, this study shed light on the complex relationship between premenstrual syndrome, processed food consumption and stress scores among females aged 18 to 35 years in Mumbai, India. The findings indicated that while there are associations between certain factors and PMS severity, such as stress levels, others, such as processed food consumption and physical activity, did not show significant correlations.

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