Journal of Advanced Scientific Research
Available online through https://sciensage.info
ISSN 0976-9595
Research Article

A STUDY ON PREVALENCE OF PRE MENSTRUAL SYNDROME, ITS ASSOCIATION WITH DIETARY HABITS AND STRESS LEVELS AMONG ADOLOSCENT GIRLS STUDYING IN GIRLS COLLEGE OF HYDERABAD

Bashama Zehra*[1], Meena Kumari Patangay[2]
[1]*Research Scholar, Clinical Nutrition and Dietetics, Department of Nutrition, St.Ann's College for Women, Hyderabad, Telengana, India*
[2]*Department of Nutrition, St.Ann's College for Women, Hyderabad, Telengana, India*
**Corresponding author: bashama.zehra@gmail.com*
Received: 15-08-2022; Accepted: 03-10-2022; Published: 31-10-2022
 https://doi.org/10.55218/JASR.202213910

ABSTRACT
Pre-Menstrual Syndrome is a group of physical, psychological, and emotional symptoms that begins 7-14 days before menses and fade once menses begins. PMDD is a psychiatric diagnosis of PMS. The cause of PMS is unknown. Hence studies need to be conducted to know the various lifestyle and dietary habits that increases the risk of PMS. The aim was to study the dietary pattern of adolescent girls aged 17-19 years of Girls college of Hyderabad during the PMS period. The objectives were to study the prevalence, association between lifestyle habits, dietary pattern and stress with PMS in these adolescent girls. Adolescent girls of Girls College, answered a self- constructed, pre tested, standardized questionnaire for the prevalence study. Information on lifestyle and dietary habits, dietary preferences and symptoms observed in PMS period, and the observed stress level was collected. Chi – square test and non- parametric test was done to interpret the data. Among the 300 respondents, 19.3% had PMDD, 46.3% had moderate to severe PMS and 34.3% had mild/no PMS. There was an association between PMS and consuming high calorie foods, herbal teas during PMS period ($p<0.05$) and also with stress ($p<0.05$) Reducing high calorie foods help to reduce PMS symptoms. Adequate sleep, less screen time and avoiding skipping of meals, consuming less fast food would reduce the prevalence. Having higher level of stress increases the risk of developing PMS or even PMDD.

Keywords: Premenstrual syndrome, Physical symptoms, Luteal phase, Dietary habits, Lifestyle habits.

1. INTRODUCTION
Most women experience some discomfort prior to or during their periods, but if the discomfort becomes severe enough to interfere with daily activities, premenstrual syndrome or stress should be assessed. Premenstrual syndrome (PMS), is a group of physical, psychological, and emotional symptoms associated with a woman's menstrual cycle that begin 7-14 days before menstruation and fade once menstruation begins [1]. PMS affects 80-95 percent of females of reproductive age. Up to 30% of women with regular menstrual cycles suffer with PMS. Some women (about 3-8% of menstrual women) suffer from a more severe and incapacitating type of PMS. Premenstrual dysphoric disorder (PMDD) is a psychiatric diagnosis for this type of PMS [2] .With PMDD, the patient's relational, social, and occupational realms are impacted by more severe and unpleasant affective symptoms [3].

The symptoms are recurrent and cyclic. During different cycles, the severity and degree of the symptoms can change [4]. According to the American College of Obstetricians and Gynecologists' diagnostic criteria, PMS symptoms are classified as affective and somatic symptoms such as anger, anxiety, social withdrawal, depression, irritability, headache and swelling. Up to 85% of menstruation women experience one or more premenstrual symptoms, with 2-10% of this group suffering from severe symptoms. Despite the fact that patients' quality of life is negatively affected [5]. Increases in aldosterone and plasma renin activity are thought to be the cause of fluid retention and bloating in PMS and PMDD individuals [6]. The leading causes of PMS are impaired hypothalamic-pituitary-adrenal axis (HPA) function, which leads to a deficiency in adrenal

hormone secretion, poor nutrition, and environmental factors [7].

The diagnostic criteria for PMS developed by the American College of Obstetricians and Gynecologists (ACOG) in 2000 are listed below. All of the criteria to be met are:

- At least one of the following physical symptoms for three consecutive menstrual cycles: breast tenderness, swelling of the extremities, headache, and bloating during the five days before menses.
- At least one of the following psychological symptoms for three consecutive menstrual cycles during the five days before menses: Depression, rage, irritation, anxiety, forgetfulness, and social disengagement are all symptoms of depression.
- Symptoms disappeared four days after menstruation and did not return until at least the 13th day of the next cycle.
- Symptoms have a negative impact on professional performance, as well as family and social life.
- During two cycles of prospective recording, symptoms emerge in a consistent pattern [8].

According to studies, physical symptoms such as headaches, joint or muscle discomfort, breast tenderness, weight gain, and bloating are followed by anger/ irritability. The most prevalent functional impairment was a reduction in academic or professional productivity [9]. The most frequent symptoms were abdominal heaviness and discomfort, followed by back, joint, and muscular problems. In every domain, PMS was linked to a lower quality of life. Premenstrual emotional symptoms were present in about half of the pupils [10].

Five (or more) of the following symptoms were present for the majority of the time during the last week of the luteal phase, began to remit within a few days after the onset of the follicular phase, and were missing in the week post menses in most menstrual cycles during the last year, with at least one of the symptoms being either 1, 2, 3, or 4:

1. A persistently negative mood, a sense of pessimism, or self-deprecating ideas
2. Severe anxiety, tension, or a sense of being "tense" or "on edge"
3. Affective lability that is noticeable (e.g., feeling suddenly sad or tearful or increased sensitivity to rejection)
4. 4. Anger or irritability that persists or worsens, or an increase in interpersonal conflicts
5. Loss of interest in normal activities (e.g., work, school, friends, hobbies)
6. Lethargy, easy fatigability, or a significant lack of energy 6. Subjective sensation of difficulty concentrating
7. Significant changes in appetite, overeating, or food cravings
8. Insomnia or hypersomnia
9. A subjective feeling of being overpowered or powerless
10. Other physical symptoms include breast tenderness or swelling, headaches, joint or muscle pain, bloating, and weight gain. [3]

1.1. Management of PMS

PMS treatment goals include reducing or eliminating symptoms, reducing their impact on activities and interpersonal relationships, and minimising treatment side effects [11]. Nonpharmacologic therapy should be administered to all patients with PMS at first.

1.1.1. Non pharmacological therapy

1.1.1.1. Education

Women who have been informed about the biologic basis and occurrence of PMS report feeling more in control of their symptoms and experiencing less discomfort [8].

1.1.1.2. Cognitive behaviour therapy

Cognitive behaviour therapy focuses on changing harmful beliefs, feelings, and behaviours through psychotherapy procedures. It appears to be effective for various affective and somatic diseases including anxiety and pain, thus it may theoretically be used to treat PMS. However, a comprehensive review published in 2008 found a paucity of evidence supporting its use in the treatment of PMS and PMDD; the analysis included just seven small randomised controlled trials (RCTs), all of which had high attrition rates [12].

1.1.1.3. Symptom diary

Keeping a daily symptom journal might help patients Fig. out when the best time is to make behavioural and other changes to control symptom exacerbations. Women say keeping a symptom diary helps them deal with PMS or PMDD. A daily symptom diary can be an excellent educational tool. The diary gives a visual record of the symptomatic intervals, with their start and resolution each month, which might be useful to the patient and her family in addition to its diagnostic significance. The

patient may be motivated to arrange activities in order to reduce stress and negative influences that may increase her symptoms, as well as achieve a sense of power over her disease, as a result of the visual validation of her cycle.

1.1.1.4. Sleep disorders

Ranging from insomnia to excessive sleep, are frequent among PMS sufferers. During the luteal phase, an organised sleep regimen with consistent sleep and wake periods is suggested. Physicians should encourage these women to stick to consistent bedtimes and wakeup times at least during the luteal part of the cycle, if not all month. Consistent bedtimes are an important aspect of effective sleep hygiene since they reduce sleep latency. Women with insomnia should also be advised against using alcohol as a sedative, as alcohol alters sleep architecture and might promote sleep disturbance.

1.1.1.5. Dietary changes

It's been suggested that restricting salt intake before menstruation will help with fluid retention, weight gain, bloating, and breast swelling and soreness. Caffeine limitation is frequently recommended for women experiencing premenstrual irritability symptoms. This is a third reasonable proposal that has not been properly addressed for women with PMS. Caffeine restriction may also help with insomnia.

The idea of eating small, frequent meals came from a now-debunked assumption that PMS is caused by a lack of glucose tolerance. The method, on the other hand, may be beneficial to women who are prone to premenstrual food binges.

1.1.1.6. Exercise

Aerobic exercise has also been shown to lessen fluid retention. As a result, aerobic activity may be beneficial in alleviating both the emotional and bloating symptoms of PMS. Although there are few studies particularly addressing exercise as a treatment for PMS, it is plausible as a recommendation because encouraging regular exercise is a generally healthy recommendation [13].

1.1.1.7. Acupuncture techniques

Complementary treatments such as acupuncture are thought to benefit because of their effect on serotonergic and opioidergic neurotransmission, which affects a variety of psychosomatic functions [14].

1.1.2. Pharmacological therapy

Nonpharmacologic measurements should be checked every three months at the very least. If symptoms do not improve, pharmacologic treatment should be sought. Medications are used to treat specific symptoms or to change the menstrual cycle. Individualized treatment should be used to target the most bothersome symptoms in each patient [11].

For the treatment of PMS, there are various brands of over-the-counter medicines available. A combined preparation with a moderate diuretic, analgesic, and antihistamine is one of the most used. The latter is likely to aid with irritation and tension symptoms. The idea of using antihistamines to treat PMS in women dates back to the 1950s, when a researcher hypothesised that PMS was caused by a "allergy" to endogenous hormones. There are very few data about these products in the study literature, despite the fact that they have been on the market for a long time. The outcomes of double-blind therapy trials employing more contemporary research standards with well-defined subject populations would be useful.

Despite the prevalence of troublesome emotional symptoms in PMS, there had been very few treatment trials of psychotropic drugs for the treatment of this illness until around the last ten years. Some possible explanations include:

- The lag time between the start of treatment and symptom remission with some types of psychotropic drugs;
- The lack of experience of gynaecologists or general practitioners with these types of drugs; and
- The stigma associated with mental illness preventing a woman from seeking treatment for her affective symptoms. Since the definition of PMDD and its predecessor, late luteal phase dysphoric condition, research on psychotropic medications has accelerated [13].

1.1.2.1. Serotonergic Antidepressants

Serotonergic Antidepressants are first-line pharmacologic therapy for severe PMS or PMDD. When compared to placebo, the SSRIs citalopram (Celexa), escitalopram (Lexapro), fluoxetine (Prozac), and sertraline (Zoloft) significantly reduce physical and psychological symptoms of PMS when taken daily or only during the luteal phase of menstruation [15]. Depression symptoms may require three to four weeks of treatment with SSRIs and SNRIs (serotonin and noradrenaline reuptake inhibitors); PMS

symptoms, on the other hand, appear to improve more quickly. A feasible alternative is to take an SSRI or SNRI on a daily basis with an increased dose during the luteal phase, especially if PMS symptoms are associated with significant depression or generalised anxiety [16].

1.1.2.2. Oral contraceptives

There are few studies that support the use of oral contraceptives to treat PMS [8]. When compared to placebo, combined oral contraceptives containing drospirenone, a spironolactone (Aldactone) derivative, appear to reduce PMS and PMDD symptoms [17]. The placebo week of oral contraceptives may theoretically allow ovarian hormonal action to begin, resulting in PMS and PMDD symptoms. As a result, inhibiting ovarian activity with long-term oral contraception may help to alleviate symptoms. [18].

1.1.2.3. GnRH Agonists

The GnRH agonists goserelin (Zoladex), histrelin (Vantas), leuprolide (Lupron), and nafarelin (Synarel) have been tested off-label to relieve severe physical symptoms of PMS and PMDD since they suppress ovarian function [19]. However, side effects, particularly hot flashes and a loss of bone density, limit their usage to a few months [8]. Although oestrogen can be reintroduced, PMS and PMDD symptoms may reappear [20].

1.1.2.4. NSAIDS

The use of nonsteroidal anti-inflammatory medicines (NSAIDs), particularly mefenamic acid and naproxen sodium, is based on the notion that PMS symptoms are caused by excessive prostaglandins. [13].

1.1.2.5. Antixylotics

Anxiolytics have been shown to be effective in women with PMDD. Anxiolytics may be an effective second-line therapy if a patient's symptoms are mostly anxiety/ tension and/or irritability. While some studies have shown that alprazolam medication during the luteal phase is beneficial, others have not [21].

1.2. Dietary and lifestyle habits associated with PMS

According to studies, there is a subset of PMS women who increase their nutritional consumption during the premenstrual period. This could be one of the reasons why some women have trouble sticking to dietary changes that have been recommended [22]. Replacing refined grains with whole grains on a daily basis can help to alleviate PMS symptoms [23]. PMS was linked to fried foods, sweet drinks, quick foods, fruits, no regular exercise, family history, hip circumference, and BMI in a study of female high school students [24]. Studies showed that dysmenorrhea, PMS, and menstrual irregularities were directly associated with dietary habits and physical activities [25]. The PMS group have an emotional eating behavior and uncontrolled eating behaviour [26]. Premenstrual syndrome (PMS) is a group of symptoms that include both physical and behavioural manifestations. Premenstrual syndrome is a health disorder that affects adolescent females. Adolescence is a developmental stage marked by major psychological and physiological changes, and premenstrual syndrome affects adolescent girls. Although the exact cause of PMS has yet to be determined, past research has suggested that it is linked to hormone changes, neurotransmitters, stress, and lifestyle variables. Few research, however, have looked at the link between lifestyle and PMS in high school girls [27]. PMS is influenced by sleep, screen time, sports club membership, and nutritional choices, according to a study of Japanese high school students [28] Alcohol consumption, stressful events, and a high-fat diet exacerbated PMS symptoms. The severity of PMS and quality of life evaluations were significantly influenced by family history [29]. According to the results of multiple logistic regression analysis, eating fast food, supplementing with vitamins and minerals, having an unbalanced budget and income, feeling generally stressed, getting little sleep, experiencing pain during periods, and the impact of menstrual discomforts on social life were all found to have a statistically significant positive relationship with PMS [30]. As a result, a healthy lifestyle can help to reduce PMS symptoms [24].

The aim is to study the dietary pattern of adolescent girls aged 17-19 years studying in Girls college of Hyderabad during the PMS (Pre- Menstrual Syndrome) period. Objectives of the study include

- prevalence of PMS among adolescent girls studying in girls college of Hyderabad.
- association between lifestyle habits and PMS among these adolescent girls.
- association between dietary pattern and PMS among these adolescent girls.
- association between stress and PMS among the adolescent girls.

2. MATERIAL AND METHODS

This is a cross-sectional study conducted among adolescent girls studying in St. Ann's college for women, Hyderabad. Stratified sampling technique was employed to select the 300 samples. Informed consent was taken from all the participants.

Inclusion criteria - Adolescent girls of age group 17-19 years with regular menstruation.

Exclusion criteria - Girls with irregular menstruation (cases of oligomenorrhea, amenorrhea and PCOS).

2.1. Data collection procedure

In this study, the adolescent girls filled a self-constructed, pre tested, standardised questionnaire. It consisted of 13 questions which included sub questions pertaining to their personal information, BMI, questions about their menstrual cycle, their routine lifestyle habits such as sleeping hours, screen time, physical activity and a Food Frequency Questionnaire. The next session included the PMS Diagnosis questionnaire (PSST-Tool), dietary preferences during PMS period and the Student Stress Questionnaire.

2.2. Description of tools

2.2.1. PMS assessment

Premenstrual Symptoms Screening Tool (PSST) is modified for adolescent's use [20]. It is a self-reporting questionnaire and includes psychological and physical symptoms, with degrees of severity on likert scale. It consisted of 2 sections and 19 questions based on symptoms of PMS/PMDD. [31]

2.2.2. Stress Assessment

Student Stress Inventory Scale (SSI) evaluated the student stress. It had 10 questions each on physical, interpersonal relationship, academic and environmental factors rated on 4 point likert scale which was scored. Score within 122-160 reflects having the severe stress, 81-121 reflects having the moderate stress and those who obtained score 40-80 reflects having mild stress. [32]

2.3. Statistical analysis

Interpretation of collected data was done by using the SPSS software. For quantitative variables like age, BMI group mean and standard deviation was used. Chi - square test and non- parametric test was done to compare dietary habits, lifestyle habits and prevalence of PMS. Statistical significance was determined as 0.05 value.

2.4. Ethical Committee Approval

The research proposal was presented in front of ethical committee of the parent institute. They approved all the methodology and statistical measures with remarks to maintain the confidentiality of the subject information.

3. RESULTS AND DISCUSSION

Chi-square tests were conducted for all to determine the results.

3.1. Prevalence of Pre-Menstrual Syndrome and PMDD

Among the 300 respondents 19.3 % of them suffered from severe form of PMS i.e. PMDD , majority of them 46.3 % suffered from moderate to severe PMS and 34.3 % had mild / no PMS.

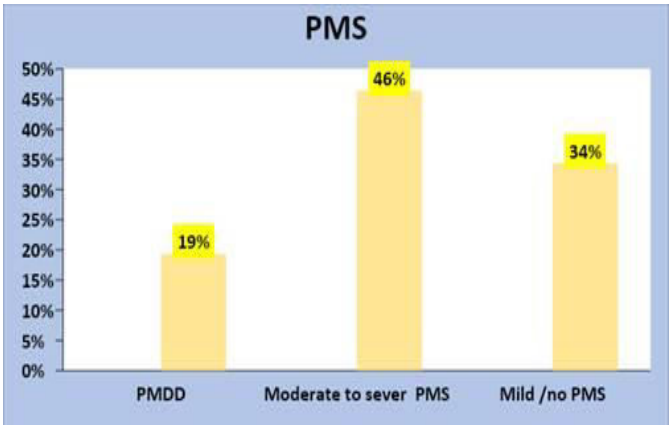

Fig. 1: Graphical representation of Prevalence of PMS and PMDD in Girls College of Hyderabad

- A study conducted by A. Dutta (in year 2021) In India, the prevalence of PMS has been estimated to range from 14.3% to 74.4%. Similar to other countries, India has recorded a wide range of PMDD prevalence rates, ranging from 3.7% to 65.7% [33].

3.2. Association of lifestyle habits with PMS

According to statistics, majority of the respondents had adequate amount of sleep 42.3% of respondents slept for 5-6 hours, 44% slept for 7-8 hours, 5% of respondents slept for more than 8 hours . 8.7% of respondents had inadequate amount of sleep of less than 5 hours.

1% of the respondents did not at all spend time on screens, 4.7% spend less than 1 hour on screen time which is not harmful. 29% of respondents spend 1-2 hours on screen time whereas majority of respondents 65.3% spend more than 2 hours on screen time which is harmful.

45% of the respondents spend less than 30 minutes on physical activities which is inadequate. Majority of the respondents had the habit of skipping a major meal 32% of respondent's skipped breakfast, 15.7% of respondent's skipped lunch, 8.7% of respondent's skipped dinner.
According to test statistics performed by chi square, the asymptotic significance values which were less than 0.05 are sleep time (0.03), screen time (0.003), and skipping of meals (0.00) which are significant and associated with PMS.

Table 1: Chi Square test table for association of sleep time, screen time, physical activity and skipping of meal with PMS

	Sleep time	Screen time	Physical activity	Skipping meal
Chi square	13.4	19.15	11.3	26.8
df	6	6	6	6
Asymp.sig.	0.03	0.003	0.07	0.00

- A study conducted by HFA Eittah et al.,(in the year 2014) found a significant difference in premenstrual cramps, anorexia, and abdominal pain between group one's breakfast eaters and group two's breakfast skippers (p=0.035, 0.016, and 0.035, respectively) [34].
- A study conducted by SH Cheng et al., (in year 2013) demonstrate the substantial correlation between potential PMS and eating egg yolk, consuming alcohol, getting less sleep, having a family history of dyslipidemia, and having higher cholesterol levels [35].

3.3. Association of PMS and foods consumed during regular days

Results show among the respondents 48.3% never consumed millets, 46% consumed fast foods once on 2-3 weeks. Only 30.3% consumed fruits and 15.6% consumed eggs every day. 34.3% never consumed fish and 54 % never consumed beef and only 20.7% had nuts every day. According to test statistics performed by chi square, the asymptotic significance values which were less than 0.05 are Fast Foods (0.0003) are significant and associated with PMS.

Table 2: Chi-square test table for consumption of millets, fast foods, fruits, eggs, fish, beef and nuts with PMS

	Millets	Fast foods	Fruits	Eggs	Fish	Beef	Nuts
Chi square	10.74	190.2	143.2	49.7	7.95	6.42	88.7
df	6	6	6	6	6	6	6
Asymp.sig.	0.09	0.0003	0.2	0.562	0.24	0.37	0.36

- A study conducted by A syed et al., (in the year 2020) showed that 73% and 60%, respectively, of students who ate junk food experienced PMS and dysmenorrhea [36].
- A study conducted by H Bazyar et al.,(in the year 2017) reveals that people with PMS had significantly greater mean intakes of meats and protein sources (p = 0.021), as well as fast food (p = 0.002), than people without PMS. Additionally, these people's average carbohydrate intake was considerably lower than that of people who did not have PMS symptoms (p = 0.006) [37].
- Another study conducted by N.Farasti (in the year 2015) concluded that people with good dietary patterns were less likely to develop PMS than those with the Western dietary pattern (high intake of fast meals and processed meat) (high intake of dried fruits,nuts). The results of the study suggest that a Western diet may be linked to PMS morbidity [5].
- Another study conducted by SH Cheng et al., (in year 2013) found that consuming alcohol and eating egg yolks were both significantly linked to potential PMS [35].
- A study conducted by N Bakhshani et al.,(in the year 2012) found that people without PMS consumed considerably more milk products, fruits, and vegetables on a monthly average (p 0.05) [38].
- A study conducted by MS Hashim (in year 2019) found that eating fruit was linked to a lower chance of experiencing behavioural PMS symptoms [39].
- A study conducted by T Takeda et al.,(in the year 2016) showed that ingestion of "fish or dried fish" was linked to a lower chance of subpar performance among PMS athletes (odds ratio, 0.61; 95% confidence interval, 0.40-0.92) [40].

- Another study conducted by K Babakhani et al.,(in the year 2020) When compared to women with PMS, healthy women consumed considerably more cruciferous vegetables (6.8 3.9 vs. 4.0 3.3) [41].
- A study conducted by AE Seedhom et al.,(in the year 2013) found that students who ate too much fast food developed PMS in 71.4% of them. Reduced consumption of fruits and vegetables was strongly associated with PMS incidence. In comparison to 13.9% of those who did not have PMS, almost 86% of those who did not consume enough fruits and vegetables did [42].

3.4. Association of PMS and foods consumed during PMS period

3.4.1. Consumption of High Calorie (Sweet) Foods

Results show majority of the respondents 60.7% consumed ice cream, 18.7% had cakes,14.% consumed traditional Indian sweets like barfi and halvas and only 6.3% consumed chocolates during PMS period.

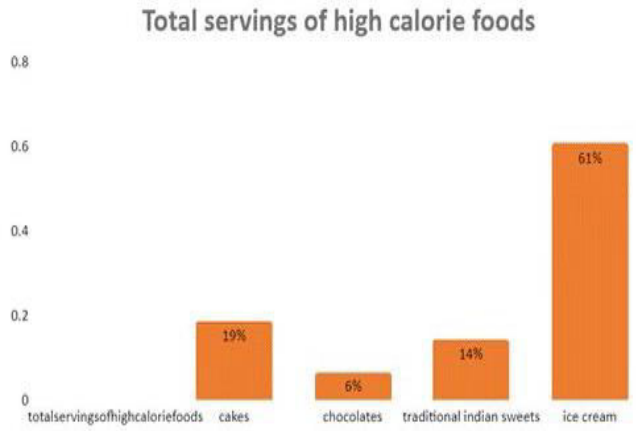

Fig. 2: Graphical representation on total servings of high calorie foods consumed during the PMS period

3.4.2. Consumption of High Salty (Savoury) Foods

Among the 300 respondents, 36% consumed kurkure, 21.7% consumed soya sticks, 16.3% consumed bingo, 13.7% consumed lays, 8.3% had salted moong dal, 3% had pasta and only 1% consumed burger during their PMS period.

3.4.3. Consumption of High Fat (Pastry) Foods

Majority of the respondents 41% consumed samosa, 25% consumed Arabian pastry sweets like bakhlava, 17.3% had curry puff, 11% had doughnuts and 5% consumed pizza during the PMS period.

3.4.4. Consumption of Herbal Teas

Majority of the respondents 63.7% consumed mint tea, 18.3% consumed lemon tea, 13.7% consumed ginger tea, 3% consumed green tea and only 1% consumed chamomile tea to get relief from symptoms of PMS.

3.4.5. Consumption of Beverages

Majority of respondents 81.7% consumed regular tea, 10% consumed coffee, 5.3% consumed sprite, 2.7% consumed thumps up and only 0.3% consumed fanta during the PMS period.

According to test statistics by chi square, the asymptotic significance values which were less than 0.05 are High Calorie Foods (0.01) and Herbal Teas (0.00).

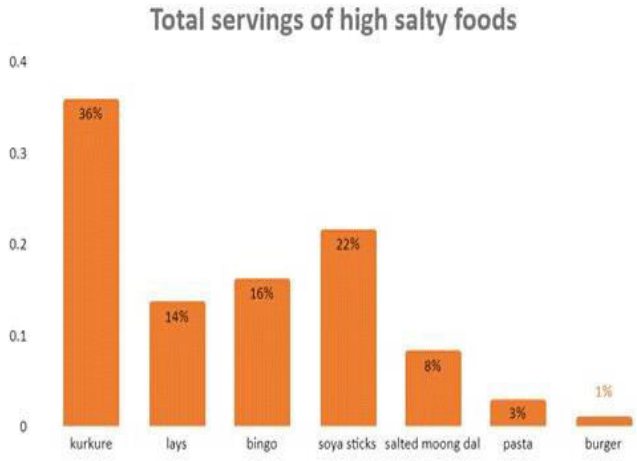

Fig. 3: Graphical representation on consumption of high salty foods during the PMS period by the respondents

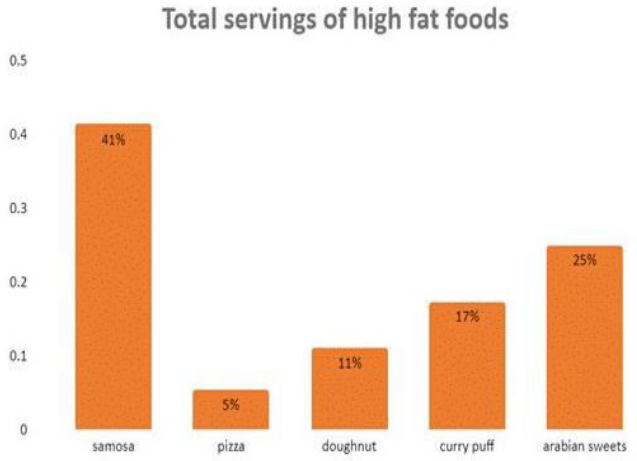

Fig. 4: Graphical representation on consumption of high fat foods by the respondents during the PMS period

Fig. 5: Graphical representation on consumption of herbal teas by the respondents during the PMS period

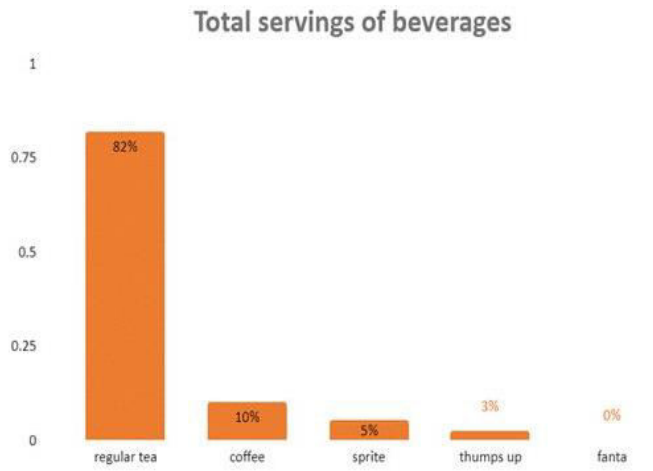

Fig. 6: Graphical representation on consumption of beverages by the respondents during the PMS period

Table 3: Chi-square test on consumption of high calorie foods, high salty foods, high fat foods, herbal teas and beverages with PMS

	High calorie foods	High salty foods	High fat foods	Herbal teas	Beverages
Chi square	15.18	10.26	3.31	39.8	9.48
df	6	12	8	8	8
Asymp.sig.	0.01	0.59	0.91	0.00	0.30

- A study conducted by MS Hashim et al(in the year 2019) indicated that eating foods heavy in calories, fat, sugar, and salt was linked to a higher probability of experiencing physical PMS symptoms [39].
- Another study conducted by Thakur H (in the year 2022) indicated that eating calories-rich foods, sweets, and fried salty snacks had an association with PMS, whereas eating oilseeds reduced the occurrence of the condition [43].
- A study conducted by AE Seedhom et al.,(in the year 2013) showed that excessive consumption of sweet foods like chocolates, cakes, and desserts had a significant impact on the occurrence of PMS since students who consumed these foods regularly had a higher rate of the condition (88.5%) than those who did not (70.2%; p>0.0001). In comparison to 7.7% of students who did not have PMS, around 92% of students who drank too much coffee did. This difference was statistically significant (p=0.005). There was no significance in this investigation for excessive tea consumption [42].
- A study conducted by GB Cross et al., (in the year 2001) Premenstrual increase in fat, carbohydrate, and simple sugar levels significantly increased, according to data gathered from women with PMS (p 0.05, p0.001). Premenstrual energy and total macronutrient intake was considerably higher for cereals, cakes and desserts, and high-sugar foods, according to an analysis of food categories in women with PMS (p 0.001) [22].

3.5. Association of PMS with stress levels

Results show, 41% had mild stress, 44% had moderate stress and 15% had severe stress. Among the respondents diagnosed as PMDD, 50% had mild stress and 43% had severe stress. Whereas the respondents having moderate to severe PMS, 54% had severe stress and 36% had moderate stress. And the respondents who had mild/no PMS 67% of them had moderate stress.

Table 4: Chi square test on association of stress levels with PMS

	Stress levels
Chi square	102.6
df	4
Asymp.sig.	0.00

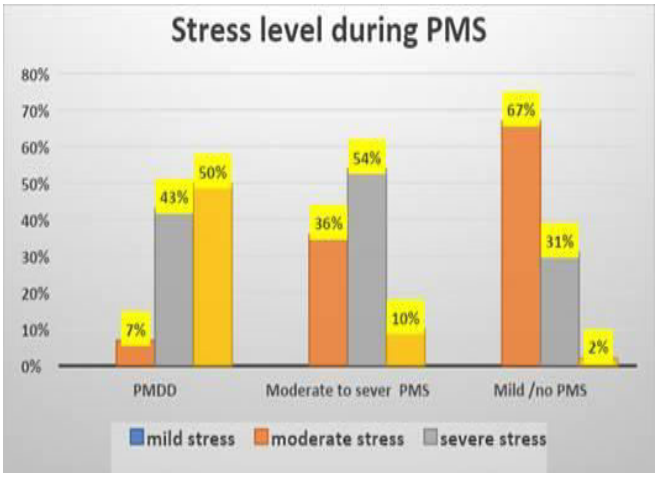

Fig. 7: Graphical representation on stress levels prevalent on different types of PMS

According to chi square test, the asymptotic significance values which was less than 0.05 indicating there is an association between PMS and stress levels(0.00).

- A study conducted by NK Armini et al., I in the year 2022) demonstrate that there is a strong relationship between adolescent anxiety and PMS (p=0.000; r=0.463). Anxious adolescents are more likely to experience PMS. The severity of PMS symptoms will increase with anxiety level [44].
- Another study conducted by K Isgin-Atici et al.,(in the year 2020) demonstrate that lower food quality scores in the PMS group were associated with PMS symptoms, anxiety (= 0.009), sad feelings (p = 0.016), and changes in sleeping pattern (p = 0.000) [45].
- A study conducted by M Mohebbi et al.,(in the year 2017) reveal that there were differences between the groups with and without PMS in terms of subjective stress (p=0.001) and exposure to passive smoking (p=0.001) [46].
- A study conducted by HJ Kim et al ., (in the year 2019) found that PMS was significantly influenced by the degree of menstrual pain, the use of analgesics during menstruation, family history of PMS, and stress (p=.19) [47].
- Another study conducted by A Safarzadeh et al., (in the year 2016) indicated that there was a significant (p=0.010) link between exercise and people's depression during PMS, and that as exercise activity increased, so did the rate of depression [48].

4. CONCLUSION

The main aim of the study was to look into dietary pattern of the adolescent girls aged 17-19 years during their PMS period. The results show that that there is an association between high calorie foods and herbal teas with PMS. Hence reducing the consumption of high calorie foods may be associated with reduced PMS symptoms and there was an association between PMS and herbal teas indicating that even though the respondents consumed herbal teas during the PMS period it was not effective as the respondents also consumed high calorie foods with it.

The objective of the study was to study the prevalence of PMS among adolescent girls studying in St.Ann's College for women, Hyderabad. Majority of the girls suffered from moderate to sever PMS, some percentage 19.3% were suffering from PMDD which is a psychiatric diagnosis of PMS wherein the mental health gets affected. Although 34% had mild/no PMS. Factors affecting this prevalence may be due to social-demographic factors, the sub- cultural differences as there are diverse cultures in a country like India that can impact the expressivity of symptoms.

Another objective of the study was to study the association between the lifestyle habits and dietary pattern with PMS. Since p value is less than 0.05 the study showed an association between PMS with sleep time, screen time and skipping of meal. Hence suggesting that having an adequate amount of sleep, spending less time on gadgets and having a balanced meal throughout the day without skipping any meal would reduce the prevalence of PMS among the adolescent girls. Adolescent girls need to be encouraged and educated to have proper sleep, avoid spending too much time on screen and not skipping any meal to increase awareness about the importance of these and how it can affect health. Also there was a positive association between consumption of fast foods and prevalence of PMS since p value was less than 0.05. This suggests that overcoming the habit of regular consumption of fast foods would help to reduce prevalence of PMS among the adolescent girls. The last objective of the study was to study the association between stress levels and PMS of the adolescent girls. Since the p value was less than 0.05 it indicated there is a positive relationship between PMS and stress. This indicated that having higher level of stress increases the risk of developing PMS or even PMDD. Hence proper

counselling, educating and cognitive behaviour therapy should be employed to manage stress among adolescent girls that would help to reduce the risk of developing PMS.

5. ACKNOWLEDGEMENTS

I express my heartfelt gratitude and sincere thanks to Principal of my College, Sister P.Amruta for giving me permission to carry out the research conveniently and easily. I would also like to thank the Head of the Department, Dr. Meena Kumari Patangay for her guidance, constant support and encouragement throughout my curriculum. I would also like to thank Mrs. Deepika Bonbon, faculty member of statistics department; her guidance enabled me to complete my research successfully.

Conflict of interest

There was no conflict of interest.

Source of Funding

There was no source of funding.

6. REFERENCES

1. Johnson SR .*Obstetrics and gynecology*, 2004; **104(4):** 845–859.
2. Deuster PA, Adera T, South-Paul J. *Archives of family medicine*, 1999; **8(2):**122–128.
3. Vahia VN. *Indian journal of psychiatry*, 2013; **55(3):** 220–223.
4. Silva CM , Gigante DP, Carret ML, Fassa A G. *Revista de saude publica*, 2006; **40(1):**47–56.
5. Farasati N, Siassi F, Koohdani F, Qorbani M, Abashzadeh K, Sotoudeh G. *The British journal of nutrition*, 2015; **114(12):**2016-2021.
6. Rosenfeld R, Livne D, Nevo O, Dayan L, Milloul V, Lavi S, Jacob G. *Hypertension (Dallas, Tex. : 1979)*, 2008; **51(4):**1225–1230.
7. Girman A, Lee R, Kligler B. *American journal of obstetrics and gynecology*, 2003; **188(Suppl 5):**S56–S65.
8. ACOG Committee on Practice Bulletins--Gynecology. ACOG Practice Bulletin: No 15: Premenstrual syndrome. *Obstetrics and gynecology*, 2000; **95(4):**1–9.
9. Shah R S, Christian D S. *Journal of Family Medicine and Primary Care*, 2020; **9(11):**5719.
10. Bhuvaneswari K, Rabindran P, Bharadwaj B.. *National Medical Journal of India*, 2019; **32(1).**
11. Dickerson L M, Mazyck P J, Hunter M H. *American family physician*, 2003; **67(8):**1743–1752.
12. Lustyk M K, Gerrish W G, Shaver S, Keys S L. *Archives of women's mental health*, 2009; **12(2):**85–96.
13. Moline ML, Zendell SM. *Medscape Womens Health*. 2000; **5:**116.
14. Habek D, Habek J C, Barbir A. *Archives of gynecology and obstetrics*, 2002; **267(1):** 23–26.
15. Brown J, O' Brien P M, Marjoribanks J, Wyatt K. *The Cochrane database of systematic reviews*, 2009; **(2):** CD001396.
16. Steiner M, Pearlstein T, Cohen L S, Endicott J, Kornstein S G, Roberts C, Roberts D L, Yonkers K. *Journal of women's health*, 2006; **15(1):**57–69.
17. Lopez LM, Kaptein AA, Helmerhorst FM. *The Cochrane database of systematic reviews*, 2009; **(2):**CD006586.
18. Coffee AL, Kuehl TJ, Willis S, Sulak PJ. *American journal of obstetrics and gynecology*, 2006; **195(5):**1311–1319.
19. Jarvis CI, Lynch AM, Morin AK. *The Annals of pharmacotherapy*, 2008; **42(7):**967–978.
20. Lee A M, So-Kum Tang C, Chong C. *Journal of psychosomatic obstetrics and gynaecology*, 2009; **30(2):**105–114.
21. Rapkin A J, Lewis E I. *Women's health (London, England)*, 2013; **9(6):**537–556.
22. Cross GB, Marley J, Miles H, Willson K. *The British journal of nutrition*, 2001; **85(4):**475–482.
23. Esmaeilpour M, Ghasemian S, Alizadeh M. *The British journal of nutrition*, 2019; **121(9):**992–1001.
24. Rad M, Sabzevary MT, Dehnavi ZM. *Journal of education and health promotion*, 2018; **7(64).**
25. Negi P, Mishra A, Lakhera P. *Journal of family medicine and primary care*, 2018; **7(4):**804.
26. Isgin-Atici K, Buyuktuncer Z, Akgül S, Kanbur N. *Journal of Pediatric Endocrinology and Metabolism*, 2018; **31(11):**1231-1239.
27. Sei J, Minai J, Hara H, Matsuura M. *Journal of Adolescent Health*, 2020; **66(2):**S70-S71.
28. Yoshimi K, Shiina M, Takeda T. *Journal of pediatric and adolescent gynecology*, 2019; **32(6):**590-595.
29. Goker A, Artunc-Ulkumen B, Aktenk F, Ikiz N. *Journal of obstetrics and gynaecology* , 2015; **35(3):**275–278.
30. Ofei P A. *Journal of Aydın Adnan Menderes Üniversitesi, Sosyal Bilimler Enstitüsü,* 2020.

31. Steiner M, Peer M, Palova E, Freeman E W, Macdougall M, Soares C N. *Archives of women's mental health*, 2011; **14(1):**77–81.
32. Arip M, Mohammad A S. *Publiction of research gate*, 2016.
33. Dutta A, Sharma A. *Health promotion perspectives*, 2021; **11(2):**161–170.
34. Eittah HFA. *Health Science Journal*, 2014; **8(4):**469.
35. Cheng SH, Shih CC, Yang YK, Chen KT, Chang YH, Yang YC. *The Kaohsiung journal of medical sciences*, 2013; **29(2):**100–105.
36. Syed A, Rao SB. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 2020; **9(4):**1377-1382.
37. Bazyar H, Mirzaee F, Akbari-Panah E, Jafarirad S. *MOJ Food Process Technol*, 2017; **5(3):**321-326.
38. Bakhshani N, Hasanzadeh Z. *Medical journal of mashhad university of medical sciences*, 2012; **55(3):**151-157.
39. Hashim MS, Obaideen AA, Jahrami HA, Radwan H, Hamad HJ, Owais A, Alardah LG, Qiblawi S, Al-Yateem N, Faris M. *Nutrients*, 2019; **11(8):**1939.
40. Takeda T, Imoto Y, Nagasawa H, Takeshita A, Shiina M. *Journal of Pediatric and Adolescent Gynecology*, 2016; **29(4):**386-389.
41. Babakhani K, Sotoudeh G, Siassi F, Qorbani M. *Shiraz E Medical Journal*, 2020; **21(2).**
42. Seedhom AE, Mohammed ES, Mahfouz EM. *International Scholarly Research Notices*, *2013*.
43. Thakur H, Pareek P, Sayyad MG, Otiv S. *International Journal of Women's Health*, 2022; **14:** 665.
44. Armini N K.A, Zahriya A N, Hidayati L, Dewi K I. *International Journal of Public Health Science*, 2022; **11(2):** 601-606.
45. Isgin-Atici K, Kanbur N, Akgül S, Buyuktuncer Z. *Nutrition &Dietetics*, 2020; **77(3):**351-358.
46. Mohebbi M, Akbari SAA, Mahmodi Z, Nasiri M. *Electronic physician*, 2017; **9(6):**4489.
47. Kim H J, Choi S Y, Min H. *Korean Journal of Women Health Nursing*, 2019; **25(4):**423-433.
48. Safarzadeh A, Zare S, Yousefabadi SR, Ghoreishinia G. *International Journal of Medical Research & Health Sciences*, 2016; **5(9).**