RESEARCH PAPER

Premenstrual Symptoms in High School and University Students in Taif City, Saudi Arabia

Hani Matrok Alotaibi[1], Rami Abdullah Al Otaibi[2], Alaa Ahmed Almasabi[3], Adel Aali Alzaidi[4]

[1]Supervisor, Psychiatry consultant, Email: Hamaalotaibi@moh.gov.sa
[2]Co-author, Psychiatry resident, Email: Raaljeaid@moh.gov.sa
[3]Co-author, Family medicine specialist, Email: AAALMASABI@MOH.GOV.SA
[4]Co-author, Email: AAALZAIDI@moh.gov.sa
***Corresponding author:** Hani Matrok Alotaibi, Supervisor, Psychiatry consultant.
Email: Hamaalotaibi@moh.gov.sa

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ABSTRACT

Introduction: Premenstrual symptoms are common, including both psychological and physical symptoms, affecting 80% of women during the luteal phase of the menstrual cycle and resolving a few days following menstruation. The importance of early diagnosis and treatment for premenstrual syndrome and PMDD could not be underestimated, given the burden and serious complications. In accord, our study aims to describe the prevalence of different premenstrual symptoms among high school and university students in Taif city, Saudi Arabia, while also identifying predictors of worse symptoms.

Methods: Our cross-sectional study will target females in two different cohorts: those will enroll in a public high school in Taif city, Saudi Arabia, and the second belonging to university female students at the University of Taif, Taif city, Saudi Arabia. All participants and legal guardians, in case the participant will be younger than eighteen, will ask to provide written consent for their participation and will interviewe privately and confidentially to answer questions of questionnaire that include about participants' sociodemographic, gynecologic history, and premenstrual symptoms using the validated version of Premenstrual Symptoms Questionnaire (PSQ-S), a nine-item scale with eight questions focusing on premenstrual symptoms and one on social impairment. Data will entere and analyze using IBM SPSS 26.

Result: There were 400 participants with the vast majority being university students (96.5%). The most noticeable were emotional and functional symptoms, especially mood swings, loss of interest, and effects on the daily life. There were significant differences in the PSQ-S scores between the educational levels and more symptoms were found with age increase ($r = 0.343$, $p < 0.001$). Another significant correlation was observed between age at menarche and severity of symptoms ($r = 0.890$, $p < 0.001$). Symptoms were also significantly linked to socioeconomic factors, such as parental education and income. Regression analysis revealed that age, maternal education, income, smoking status, and height were good predictors of the severity of the symptoms, and these factors accounted 16.4 percent of the variation.

الملخص

المقدمة: تُعد الأعراض السابقة للحيض شائعة، وتشمل أعراضًا نفسية وجسدية، وتؤثر على نحو 80% من النساء خلال مرحلة الجسم الأصفر من الدورة الشهرية، وتختفي خلال أيام قليلة بعد بدء الحيض. وتكمن أهمية التشخيص المبكر وعلاج متلازمة ما قبل الحيض واضطراب ما قبل الطمث الاكتئابي **(PMDD)** في حجم العبء الصحي والمضاعفات المرتبطة بهما. وبناءً على ذلك، هدفت دراستنا إلى وصف مدى انتشار الأعراض المختلفة السابقة للحيض بين طالبات المرحلة الثانوية والجامعة في مدينة الطائف بالمملكة العربية السعودية، بالإضافة إلى تحديد العوامل المتنبئة بزيادة شدة الأعراض.

المنهجية: اعتمدت الدراسة على تصميم مقطعي مستعرض استهدف الإناث في فئتين: طالبات المرحلة الثانوية في المدارس الحكومية بمدينة الطائف، وطالبات جامعة الطائف. تم الحصول على موافقة خطية من المشاركات أو أولياء الأمور في حال كانت المشاركة دون سن الثامنة عشرة. تم جمع البيانات من خلال مقابلات خاصة وسرية باستخدام استبيان يتضمن الخصائص الديموغرافية والتاريخ الصحي والإنجابي والأعراض السابقة للحيض، باستخدام النسخة المعتمدة من استبيان الأعراض السابقة للحيض**(PSQ-S)** ، وهو مقياس يتكون من تسعة بنود تشمل ثمانية حول الأعراض وبندًا واحدًا حول التأثير الاجتماعي. تم تحليل البيانات باستخدام برنامج **SPSS** الإصدار 26.

النتائج: شملت الدراسة 400 مشاركة، وكانت الغالبية من طالبات الجامعة (96.5%). كانت الأعراض الانفعالية والوظيفية هي الأكثر شيوعًا، خصوصًا تقلب المزاج، وفقدان الاهتمام، وتأثير الأعراض على الحياة اليومية. كما أظهرت النتائج وجود فروق ذات دلالة إحصائية بين المراحل التعليمية، مع زيادة شدة الأعراض مع التقدم في العمر (**$r = 0.343$, $p < 0.001$).** وتم العثور على علاقة قوية بين عمر بدء الحيض وشدة الأعراض (**$r = 0.890$, $p < 0.001$).** كما ارتبطت العوامل الاجتماعية والاقتصادية مثل تعليم الوالدين والدخل بشكل معنوي مع شدة الأعراض. وأظهر تحليل الانحدار أن العمر، وتعليم الأم، والدخل، وحالة التدخين، والطول كانت عوامل متنبئة مهمة بشدة الأعراض، حيث فسرت 16.4% من التباين في الدرجات.

Keywords: Premenstrual syndrome, PMS, PMDD, Menstrual cycle, Taif, Saudi Arabia, Psychological symptoms, Physical symptoms.

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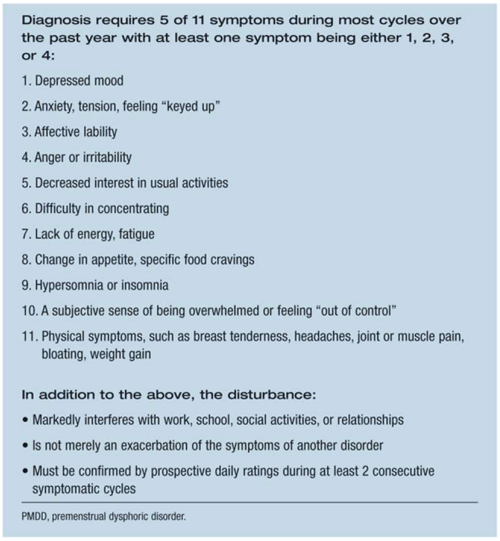
1. Introduction

Premenstrual symptoms are common, affecting 80% of women during the luteal phase of the menstrual cycle and resolving a few days following menstruation [1]. Psychiatrists and gynecologists use different terms to describe the symptoms experienced by women in the premenstrual period, including premenstrual syndrome and premenstrual dysphoric disorders (PMDD) [2]. Based on DSM-IV criteria (Figure 1), the 12-months prevalence of PMDD is estimated to be 5.8%. In the case of excluding the impairment criterion, it is estimated that the prevalence will rise to 18.6% [3].



Diagnosis requires 5 of 11 symptoms during most cycles over the past year with at least one symptom being either 1, 2, 3, or 4:

1. Depressed mood
2. Anxiety, tension, feeling "keyed up"
3. Affective lability
4. Anger or irritability
5. Decreased interest in usual activities
6. Difficulty in concentrating
7. Lack of energy, fatigue
8. Change in appetite, specific food cravings
9. Hypersomnia or insomnia
10. A subjective sense of being overwhelmed or feeling "out of control"
11. Physical symptoms, such as breast tenderness, headaches, joint or muscle pain, bloating, weight gain

In addition to the above, the disturbance:

- Markedly interferes with work, school, social activities, or relationships
- Is not merely an exacerbation of the symptoms of another disorder
- Must be confirmed by prospective daily ratings during at least 2 consecutive symptomatic cycles

PMDD, premenstrual dysphoric disorder.

Figure 1: DSM-IV criteria for the diagnosis of PMDD

The range of symptoms experienced in premenstrual syndrome includes changes in appetite, weight gain, abdominal pain, back pain, low back pain, headache, swelling and tenderness of the breasts, nausea, constipation, anxiety, irritability, anger, fatigue, restlessness, mood swings and crying. These symptoms vary from one individual to another, but common risk factors increase the risk and intensity of premenstrual syndrome symptoms [4].

Along with those mentioned above dietary and lifestyle factors, a study of female college students in Egypt indicates a positive correlation with a family history of premenstrual syndrome while also linking its risk to physical inactivity, habitual excess consumption, coffee, high body mass index, fast food consumption, and smoking. However, these factors combined only contributed to 52% of the variability in the logistic regression model [5]. This led researchers to look into local gene expression patterns and circulating hormone levels. Shockingly, the absolute levels of progesterone, estrogen, and testosterone were indifferent between individuals at low or high risk of premenstrual syndrome. Consequently, it has been suggested that premenstrual syndrome and its symptoms arise due to the interaction between hormone receptors or neurotransmitter variants [6]. Thus, it was found that variants in the estrogen receptor alpha gene, specifically in intron 4, are associated with the risk of PMDD [7].

Currently, premenstrual syndrome and PMDD are managed with selective serotonin reuptake inhibitors, such as fluoxetine, paroxetine, sertraline, and escitalopram [8]. Alternatively, combined hormonal contraception might be used in order to block the ovulatory surge of sex steroids [9]. This is brought around by patients' absence of symptoms during anovulatory cycles and in women undergoing treatment agonists of gonadotropin-releasing hormones or those who had bilateral oophorectomy [10]. Other treatment options include progesterone receptor modulators, despite their inconsistency in literature. Given the sparsity of local research and advances in our understanding of the premenstrual phenomenon, this current study aims to estimate the prevalence of various physical and emotional premenstrual symptoms in university and high school students in Taif city, Saudi Arabia.

1.1 Background:

The impact of premenstrual symptoms on the overall quality of life and daily activities among female adolescents in high school and university settings is noteworthy. These symptoms have the potential to exert considerable influence on both academic achievement and social engagements. Therefore, it is imperative to thoroughly examine the occurrence, characteristics, and strategies employed to mitigate these symptoms. This comprehensive analysis holds great significance in the enhancement of students' comprehensive well-being and educational journey.

1.2 Rationale:

Premenstrual Symptoms in High School and University Students in Taif City, Saudi Arabia," are motivated by the need to explore an important yet understudied element of female students' health and well-being in a unique cultural and educational setting. Premenstrual symptoms are

known to afflict a major proportion of the female population, but their impact on Taif City high school and university students is mainly unknown. The rationale for this study stems from the realisation that premenstrual symptoms among students may differ from those of other populations due to the particular pressures, lifestyle, and cultural aspects associated with this life period. By investigating the occurrence, nature, and effects of premenstrual symptoms in these young women. The study will add crucial localised data to our understanding of how premenstrual symptoms affect students' academic performance, emotional well-being, and overall quality of life. Finally, the findings have the potential to create a healthier and more informed environment for female students in Taif City, allowing them to negotiate the hurdles offered by premenstrual symptoms and promote their holistic development.

1.3 Aim

The aim of this study is to look into the prevalence, impact, and coping mechanisms for premenstrual symptoms among female high school and university students in Taif City, Saudi Arabia to provide insights for targeted support and interventions.

1.4 Objectives:

Primary objective

- To assess the prevalence, nature, and impact of premenstrual symptoms in the target population using a comprehensive questionnaire.

Secondary Objectives:

- To identify the most common premenstrual symptoms experienced by participants.
- To determine the severity and frequency of premenstrual symptoms across different age groups and educational levels.
- To explore the relationship between menstrual cycle regularity and the occurrence of premenstrual symptoms.
- To investigate any potential differences in the types and intensity of premenstrual symptoms reported by participants in high school and university settings.
- To assess the impact of premenstrual symptoms on participants' academic performance, social interactions, and daily activities.

2. Literature review:

Over the recent years numerous women have complained of several menstrual related issues, especially premenstrual symptoms; which usually result in emotional disturbances and discomfort. Though these symptoms are common among women, there are those who are more likely to use self-medication like taking pills or herbs without necessarily knowing the cause of their problem. Thus, before treating menstrual disorders, women should possess proper information about the nature of the disorder [11]..

Research conducted in the past suggests that menstrual related symptoms have a significant impact on the quality of life of the women. Women with these symptoms usually report worse levels of general health, physical, emotional, social and academic functioning[12]. Especially premenstrual symptoms are often related with mood disruptions, irritability, fatigue, and lack of concentration, which may have a detrimental effect on everyday functioning and well-being in general [12].

Furthermore, menstrual symptoms have been shown to impact students' academic performance and productivity. Numerous female students lack concentration, become less involved in the classroom, and academically less efficient during the premenstrual period. These symptoms can also cause absenteeism or presenteeism, whereby, students attend school but can not work effectively because of the discomfort and failure to focus[13;14]. This underscores this great educational burden related to premenstrual symptoms among teenagers and young adults.

Moreover, social interactions and everyday life may be disrupted by premenstrual symptoms. Social withdrawal, physical activities, and participation in other extracurricular activities may occur because of emotional instability or physical discomfort. All these difficulties can eventually influence their social relations and personal development [15]..

In addition, the premenstrual symptoms are not universally experienced by all people with mild symptoms that do not always disrupt the day to day operations being experienced by the sufferer to the extreme symptoms that are so severe that they disorient the usual activities. Middle-range symptoms can lead to observable impairments in daily activities, and severe symptoms can interfere with daily duties of individuals to perform their duties effectively [16].

Considering such effects, raising awareness and education of premenstrual symptoms is important. The right health education programs provided to students may increase their awareness of these symptoms, healthy coping mechanisms, and decrease adverse outcomes on their academic performance and quality of life [11].

Nattapong Buddhabunyakan et all conducted a study and the aim of the study was to assess the prevalence of PMS in Thai high school students. From September to December of 2015, a prospective study was done among menstrual high school students in Khon Kaen, Thailand. Participants were asked to fill out an anonymous questionnaire that included demographic information, menstrual patterns, and symptoms that would be recorded on a daily calendar of premenstrual experiences based on the diagnostic

criteria proposed by the American College of Obstetricians and Gynaecologists. All of the data was collected prospectively over a period of 90 days. The self-report questionnaire was completed by 289 (72.4%) of the 399 participants. PMS was reported by 86 subjects (29.8%; 95% CI, 24.5%-35.4%). Breast soreness (74.4%) and furious outbursts (97.7%) were the most common physical and affective symptoms among PMS participants. There were significant differences between the PMS and non-PMS groups, and PMS was associated with a variety of scholastic issues, including lack of attention and motivation, poor individual and collaborative task performance, and low scores. However, no significant alterations in interpersonal connections were seen between the PMS and non-PMS groups. PMS, or premenstrual syndrome, is a prevalent monthly problem among Thai high school students. Angry outbursts and breast soreness were the most commonly reported symptoms in this study [17].

Gul Pinar et al conducted a study and the purpose of this research is to analyze the frequency of Premenstrual Syndrome (PMS) in college students, the factors affecting Premenstrual Syndrome and the effect of Premenstrual Syndrome on life quality. The study included 316 students from Başkent University's Medical Sciences Faculty who agreed to participate in the study. The researchers devised the "Questionnaire Form," "PMS Rating Scale," and "Life Quality Scale" to collect data for the study. Percentage distribution, Chi-square test, One Way Anova test, Logistic regression, and Multi nominal regression analysis were utilised in the data analysis. 72.1% of the pupils tested positive for PMS. Low back pain, stress-discomfort, nervous-anger, distention, and breast tenderness are the most common symptoms. PMS was shown to be significantly higher in students who had monthly irregularities, dysmenorrhea, drank 2 cups of coffee or more per day, smoked, and drank alcohol. ($p < 0.05$). When the relationship between PMS and life quality was examined, it was discovered that life quality diminishes as the average PMS score increases (p 0.05).College students have a high rate of PMS, which has a negative impact on their quality of life. It was discovered that the medical staff's preventative, instructive, and consultancy responsibilities became increasingly important in lowering the effect of the variables generating and/or worsening these symptoms in order to reduce PMS incidence and improve the students' life quality [18].

Sevil Sahin et all conducted a study in 2014 and the main objective was to determine the frequency of premenstrual syndrome, review associated factors and evaluate quality of life in university students. Between October 25, 2012, and April 25, 2013, Sakarya University in Turkey conducted a cross-sectional study. The Premenstrual Syndrome Scale, based on the Diagnostic and Statistical Manual III and IV (revised), was used to assess premenstrual syndrome. The Short Form-36 was used to assess quality of life. The data was analyzed using the Chi-square test, the Mann-Whitney U test, and logistic regression analysis. According to the findings, the median age of the 1008 students in the survey was 21 (range: 17-25). Premenstrual syndrome was shown to be less common among overweight/obese students (p0.05). Students with PMS had poorer average ratings in all aspects of quality of life (p0.05 for each domain).They concluded that premenstrual syndrome, a major health issue among university students, had a negative impact on quality of life [19].

Ashraf Direkvand-Moghadam et al conducted a study on the topic of Premenstrual Syndrome (PMS) is a common health problem in women in reproductive age. The present study aimed to investigate the prevalence of PMS using meta-analysis method. This meta-analysis systematically reviewed the prevalence of PMS. A search was conducted in credible English literature using the terms Premenstrual Syndrome, PMS, PMS prevalence, and PMS symptom. In the initial search, 53 items were found. Following an examination of full-text papers, 17 articles were chosen for study. Meta-analysis (random effects model) was used to aggregate data. STATA software, Version 11.1, was used to analyse the data. The findings revealed that 17 studies matched our inclusion criteria in total. The combined prevalence of PMS was 47.8% (95% confidence interval: 32.6-62.9). France had the lowest and highest prevalence rates, with 12% (95% CI: 11-13) and 98% (95% CI: 97-100), respectively. However, the meta-regression scatter plot revealed an increasing trend in the prevalence of PMS from 1996 to 2011, yet the connection between PMS prevalence and study year was not significant (p= 0.797). They concluded that considering that different tools have been used in studies and many studies have been designed based on a limited sample, therefore, future research needs to consider the prevalence of PMS in different countries of world [20].

Mostafa Rad et all conducted a study and the aim of this study was to determine the factors associated with PMS in female high school students. This cross-sectional correlation study was conducted in 200 female high school students in Sabzevar city using multistage random sampling in the academic year of 2016–2017. The PMS temporary diagnostic questionnaire and the Beck Depression

questionnaire were used to collect data; the nonresonant tape was accurate to 0.1 cm, and the digital scale was accurate to 0.1 kg. We used SPSS software and the Mann-Whitney U-test to analyse the data. This study found a link between PMS and fried foods (P = 0.017), sweet drinks (P = 0.018), fast food (P = 0.048), fruit (P = 0.012), no habitual exercise (P = 0.006), a family history of PMS (P = 0.002), hip circumference (P = 0.04), and body mass index (P = 0.04). They concluded that there is a relationship between PMS and some anthropometric indices and nutritional/metabolic factors. Therefore, having a proper lifestyle is effective in reducing PMS [21].

Mehdi Ranjbaran et al conducted a study and the present study aimed to determine the overall prevalence of PMS in Iran by a systematic review and meta-analysis study.In this systematic review and meta-analysis, we searched international databases included ISI Web of Knowledge, PubMed/Medline, Scopus, Google Scholar, and also local databases including Iranmedex, Scientific Information Database, and Magiran for articles in English and Persian language published up to September 2016. We carried out data analysis with Stata version 11. We examined for heterogeneity in study outcomes using I2 statistics and a Chi-square-based Q test. We also used meta-regression to look at the influence of putative heterogeneity variables on the prevalence of PMS. We evaluated 9147 reproductive-age women from 24 papers that were included in the meta-analysis. We estimated the overall prevalence of PMS to be 70.8% [95% CI: 63.8-77.7] based on the results of the random effect model. Subgroup analysis found that PMS was prevalent in 80.4% (95% CI; 66.9-93.9) of high school students, 68.9% (95% CI; 59.2-78.6) of university students, and 54.9% (95% CI; 51.6-58.2) of the general population. A univariate meta-regression model revealed that increasing the age of individuals reduced the occurrence of PMS, however this was not statistically significant (p=0.155). Our finding showed that PMS was prevalent in Iranian reproductive age women especially among high school students. More epidemiological research for determining factors that affect PMS prevalence seems essential [22].

Nour Mohammad Bakhshani et al conducted a study to investigate the frequency of premenstrual symptoms and prevalence of PMS among young Iranian women. A cross-sectional study was carried out in 2005 among female students of Zahedan University (Iran), aged 18-27 years. Overall 300 participants were asked to complete an anonymous questionnaire assessing premenstrual symptoms. The questionnaire items were based on DSM-IV diagnostic criteria for premenstrual dysphoric disorder and PMS symptoms documented in the literature. According to the findings, 98.2% of the 300 participants experienced at least one mild to severe premenstrual symptom, and 16% matched the DSM-IV criteria for PMS. The most prevalent symptoms were exhaustion or lethargy (84%), depression (72.3%), abrupt sadness or tearfulness (70.3%), worry (70%), backache (69%), and sleep problems (66%). There was no significant difference in the intensity of symptoms based on marital status or living situations (living with or away from parents), however the younger women (18-20 years) had much more severe symptoms than the older women (21-24 and 25-27 years). They concluded that High frequency of premenstrual symptoms and significant prevalence of PMS was found in that study sample. A preventive and treatment strategy for PMS is highly recommended [23].

HATİCE IŞIK and its co conducted a study and the purpose of the present study was to investigate the incidence of PMS, risk factors affecting PMS symptoms, and life quality in health science students. The study involved 608 volunteer female students studying at a state university's health campus in Turkey. Participants were requested to complete questionnaires containing sociodemographic information, PMS symptoms, and SF-36 life quality evaluations. The findings revealed that the overall prevalence of PMS among participants was 84.5%. PMS and general health SF scores averaged 118.34 37.3 and 20.03 3.72, respectively. Students, who ate an irregular breakfast, drank two cups of coffee every day, and used alcohol or fast food scored higher on the PMS. Irregular menstruation and a family history of PMS were associated with higher PMS scores and lower life quality (P 0.05). The life quality of the students significantly decreased as the severity of PMS increased (P < 0.001). They concluded that Low body mass index, family history, irregular menstruation, bad eating habits such as fast food consumption and irregular breakfasts, and coffee and alcohol consumption increased PMS risk significantly. In order to improve their life quality, students should be informed about the symptoms, risk factors, and management options of PM [24].

According to the research carried out by Salem et al. (2020), the most prevalent gynecological health issues among females include menstrual-related disorders. Premenstrual syndrome (PMS) specifically is a very common disorder which afflicts females of various ages as a result of the interplay of biological, psychological, and social factors. As pointed out in the study, PMS might severely worsen the quality of life of women, along with their social functioning and everyday activities. The main objective of the research

was to determine the prevalence and predictors of PMS among the females studying in Saudi governmental secondary schools in Jeddah. The cross-sectional research design has been used, with a population of more than 64,000 students. Multistage probability sampling technique was used to select a sample of 400 participants. A structured questionnaire was used to gather data that was slightly tested and checked by expert consultants in order to guarantee its reliability and validity. The results showed that the average age of the subjects was 16.7 ± 1.16 years. The incidence of PMS was found to be 37% implying that over a third of the students were affected. It was also found that the differences were statistically significant with third-year students and Saudi nationals describing higher prevalence. The study also found family history of dysmenorrhea as an important risk factor related to PMS. The research was able to conclude that PMS is a common condition among secondary school students in Jeddah with menstrual pain being the most frequently reported. Also, active and passive smoking, as well as a family history of dysmenorrhea, were found to be the most important predictors of PMS. These results highlight the importance of more health education and specific intervention to minimize the risk of PMS in adolescent learners [25].

The article by Jareebi et al. (2025) highlights the fact that one of the most common illnesses impacting adolescent girls and young women across the globe is dysmenorrhea, or painful menstruation. It affects academic performance, quality of life, and social interactions negatively to a great extent. Although dysmenorrhea is prevalent, it is under-researched in Saudi Arabia and as a result, there is no national data on the condition. The objective of the study was to determine the prevalence, severity and determinants of dysmenorrhea amongst Saudi women. The study design used was cross-sectional, and a questionnaire was used, with a sample of 1,026 participants who were recruited into the study using a convenience sampling method. Validated online self-administered questionnaire was used to collect data. Descriptive and inferential statistical tests were performed and multiple logistic regression performed to determine the significant predictors of dysmenorrhea. The R software was used to perform the analysis. The results indicated that dysmenorrhea occurrence was very high 87 percent with the mean pain score of 6 ± 2.2 which showed that the pain was moderate to severe. Mood swings (79%), abdominal bloating (60%), diarrhea (32%), and constipation (26%), were the most frequently reported related symptoms, which underscores the multidimensionality of menstrual-related discomfort. Also, the findings recognized some important determinants of dysmenorrhea. Citizenship, work status, and a history of gynecological surgeries were found to be related to a higher risk of dysmenorrhea. On the contrary, multiparity was observed to be a protective factor and it decreased the chances of having menstrual pain. The study found that dysmenorrhea is quite common in women in Saudi Arabia, and it is characterized by numerous physical and emotional symptoms that adversely impact the quality of life of women. The above findings highlight the need to establish the determinants and related factors involved in dysmenorrhea to enhance management strategies and minimize its total impact on the health of women [26].

According to the study by Arif (2016), the current amount of research, concerning the premenstrual syndrome (PMS), is scarce in the Gulf countries, though unique cultural factors might be involved, which can shape the perceptions, attitudes, and responses of women to the condition. Considering that there is no information on the knowledge and attitudes of women towards the PMS in Taif or the Saudi population in general, it is necessary to state that the further study in this field is significant. The purpose of the study was to evaluate the extent of knowledge and attitudes of women who visit Primary Health Care Centers (PHCCs) under the Ministry of Health in Taif, as well as determining the factors that affect such attitudes. The cross-sectional design was used with Saudi females of the ages of 13-50 years. Among the 17 PHCCs in Taif, 8 centers were randomly chosen and the participants were recruited by systematic random sampling method. The structured Arabic self-administered questionnaire was used to gather the data and it would include socio-demographic characteristics, medical and reproductive history, diagnostic criteria of PMS, and knowledge of the condition among the participants. The findings revealed that 249 women were involved in the study and the average age was 30.6 ± 9.6 years. About a third of the respondents (33.7) indicated family history of PMS. A relatively large percentage (61.4) of the sample reported having PMS, which means that over half of the respondents had the condition. The results demonstrated significant gaps in terms of knowledge and attitudes. The correct recognition of PMS as a gynecological disorder was only 14.1% with 32.5% having the awareness that they needed medical attention. In a question about what they would do should they be diagnosed with PMS, 30.9% of them would use medication, 22.1% would visit a physician, and 13.6% would use

traditional remedies with 23.3% saying that they would do nothing. Although these gaps exist, most women (76.7%) were willing to share information and help others. The research found that PMS is a prevalent health problem among women in Taif. The comparatively low propensity to consult a healthcare expert or have a treatment is, however, an indicator of cultural barriers and social taboos associated with menstrual health. Such results demonstrate the necessity of raising awareness, educating, and culturally sensitive interventions to enhance the knowledge and coping of PMS in women [27].

In the research by Baz et al. (2023), healthy lifestyles with the consumption of balanced nutrition, physical activity, sleep, and the avoidance of counterproductive habits, such as smoking, drug abuse, and alcohol consumption, are a key factor in ensuring mental health and addressing psychological symptoms like anxiety, stress, and depression. The objective of the study was to assess how healthy lifestyle practices affect the psychological well-being of Saudi girls as adolescents. The cross-sectional study was conducted among secondary school students in Taif City, Saudi Arabia. To determine the lifestyle behaviors and psychological outcomes, the study employed validated assessment instruments, such as the Simple Lifestyle Indicator Questionnaire (SLIQ), the Patient Health Questionnaire (PHQ-2 and PHQ-9), the Generalized Anxiety Disorder scale (GAD-7), and the Perceived Stress Scale (PSS). The results indicated that the respondents had an age range of 15 to 19 years with the mean age of 16.72/0.96 years. Most students (58.3%) indicated having a healthy lifestyle and the small percentage of students (6.7%) indicated that they had an unhealthy lifestyle. Nevertheless, in spite of the overall good lifestyle behaviors, psychological distress was extremely widely spread among the participants. Depression was found in 52.5% of the students with moderate severity and moderate severe depression among 14.8 and 6.9% respectively. Moreover, 24.3 and 17.8 percent of the students reported having moderate and severe anxiety, respectively, and 18 percent of students reported having high perceived levels of stress. The findings also found that the lifestyle patterns and psychological well-being were statistically significant and unhealthy lifestyles were associated with increased depression, anxiety, and stress levels ($p < 0.001$). This implies that any small changes in lifestyle behaviours can greatly affect the mental health of adolescents. The research reached the conclusion that the level of unhealthy lifestyle behaviors is not very high in Taif among secondary school girls, but there is a significant and definite correlation between the quality of lifestyle and psychological well-being. These results highlight the need to encourage healthy lifestyles in order to enhance the mental health outcomes of adolescents [28].

According to the research by Rani et al. (2025), premenstrual syndrome (PMS) is a prevalent issue that impacts the physical, psychological, and behavioral well-being of women of reproductive age. The rationale behind the study was to find out the relationship between sociodemographic factors, menstrual factors and severity of PMS symptoms among Saudi Arabian female students. It was a cross-sectional study, involving a sample of 370 female college students. A structured questionnaire was used to gather data on sociodemographic factors, menstrual history, and PMS symptoms in three domains, namely, physiological, psychological, and behavioral symptoms. The analysis used descriptive statistics, ANOVA and multiple linear regression to show significant factors associated. The results showed that the majority of the respondents (94.6) worked in different academic departments, 65.4% of them had a normal body mass index (BMI), and 76.5% had moderate menstrual flow. Statistical analysis showed that PMS symptoms were significantly related to various factors such as BMI, marital status, menstrual cycle characteristics, and menstrual flow.Also, regression analysis revealed that the overall physiological, psychological, and behavioral symptoms scores of overweight and obese students were significantly lower than those of underweight students. Conversely, the students with heavy menstrual flow had higher scores in all domains, which indicated more severe manifestations of PMS. Also, the students of non-health related departments were found to have higher psychological symptom scores whereas those who had an early menarche (under 13 years) were more likely to have behavioral symptoms.The researchers concluded that BMI, menstrual flow characteristics, field of study, and age at menarche had a significant effect on the symptoms of PMS by female students. The results of the studies indicate the need to focus on specific health education and intervention activities that consider these aspects to be able to control PMS symptoms and enhance the well-being of students [29].

3. Methodology

3.1 Study design

In this study, a cross-sectional design will be used to determine the prevalence and severity of premenstrual symptoms among female students in Taif City, Saudi Arabia. The research will be carried out within the years 2023. Cross-sectional method suits the goal of determining the

distribution of symptoms and the connection between premenstrual symptoms and a number of sociodemographic, menstrual, and lifestyle variables at one time.

3.2 Study population:

The study population will consist of two female students in two educational settings Taif City, Saudi Arabia. The high school students belonging to the public schools will form the first group whereas the female students of the University of Taif will form the second group. This two-population sample can be compared with the various levels of education and stages of development.

3.3 Eligibility criteria

Inclusion Criteria:

- Female participants aged between 15 and 25 years.
- High school students and university students.
- Participants with regular menstrual cycles who menstruate.

Exclusion Criteria:

- Participants younger than 15 years or older than 25 years.
- Pregnant or lactating participants.
- Participants with known hormonal disorders or conditions that affect the menstrual cycle (e.g., polycystic ovary syndrome, thyroid disorders).
- Participants using hormonal contraceptives.
- Participants with chronic medical conditions (e.g., chronic pain conditions, autoimmune disorders) that could influence symptom reporting.
- Participants with diagnosed psychiatric disorders (e.g., depression, anxiety) that could influence symptom reporting.
- Participants who have cognitive impairments

3.4 Study area:

The research will be carried out in Taif City, Kingdom of Saudi Arabia. The sampling will be based on the chosen schools of the population (high schools) and on the University of Taif. These places were selected to provide a representation of both the secondary and higher levels of education in the same geographical and cultural setting.

3.5 Sample size:

An online cross-sectional sample size calculator (Epitools) was used to compute the sample size, 95 percent and 5 percent confidence interval and margin of error. The minimum required sample size was determined based on an estimated population of about 400 qualified participants. This was further supplemented by 10% to cover possible non-response or incomplete questionnaires ensuring sufficient statistical power to conduct the analysis.

3.6 Sampling technique

The population can be divided into strata based on educational levels. Random samples can then be drawn from each stratum proportionate to its size, ensuring that both groups are adequately represented in the study. Convenience Sampling technique with-in each stratum, convenience sampling can be employed to select participants from high schools and universities that are accessible and willing to participate in the study. This approach can expedite data collection and reduce logistical challenges.

3.7 Data collection tool:

Premenstrual Symptoms Questionnaire (PSQ-S), a nine-item scale with eight questions focusing on premenstrual symptoms and one on social impairment. PSQ-S did not include questions about physical symptoms but only psychiatric symptoms, including depressed mode, anxiety or tension, tearfulness, anger or irritability, decreased interest, difficulty concentrating, fatigue or lack of energy, feeling overwhelmed, work efficiency, and productivity.

3.8 Data collection technique:

Data collection will be done with self-administered online questionnaire created through Google Forms after obtaining the ethical approval. The questionnaire will be translated to Arabic and undergo pre-test in order to make sure that it is clear, culturally appropriate, and easy to understand. Everything will be compulsory to reduce missing data and enhance completeness. The survey link will be sent to the participants who are eligible in the selected high schools and University of Taif. The process of data collection will be carried out until the desired sample size is reached.

3.9 Variable:

Dependant variables:

Premenstrual Symptoms: This refers to the range of physical, emotional, and psychological symptoms experienced by female high school and university students in Taif City during their menstrual cycles.

Independent variable:

- High school or University.
- Age of the participants.
- Cultural Factors.
- Lifestyle Factors: Factors such as diet, exercise, sleep, and stress.
- Menstrual Cycle Regularity: Regular or irregular menstrual cycles.
- Awareness and Access: Awareness of available resources and access to information related to premenstrual symptoms.
- Support Systems: Presence or absence of emotional and healthcare support for managing symptoms.

3.10 Ethical Approval:

The study received ethical approval by the Institutional Review Board (IRB) of the respective hospital under the Saudi Ministry of Health. This research was carried out in a manner that conformed to the principles of ethics as stipulated in the Declaration of Helsinki. Participation was voluntary and informed consent was taken out of all the participants and parental consent signed out of those who were below 18 years. The study was conducted with strict confidentiality and anonymity.

3.11 Statistical Analysis:

IBM SPSS Statistics version 26 was used to analyze the data. Characteristics of participants and distribution of symptoms were summarized using descriptive statistics, such as means, standard deviations, frequencies, and percentages. A high school and university sample were compared using independent samples t-tests to determine the differences between PSQ-S scores, and one-way ANOVA was used to determine the differences between socioeconomic groups. Pearson correlation was utilized to analyze the relationships among PSQ-S scores, age, and other continuous variables.

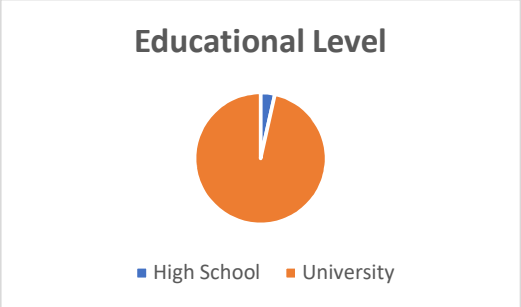
The analysis was done using multiple linear regression analysis to establish the significant predictors of premenstrual symptom severity, such as sociodemographic, menstrual, and lifestyle factors. The significance level was established to be $p < 0.05$, and the results were interpreted on 95% confidence intervals to determine the strength and precision of the findings.

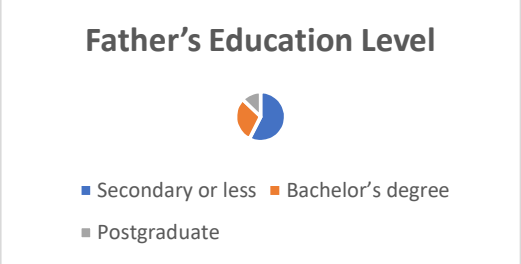
4. Result:

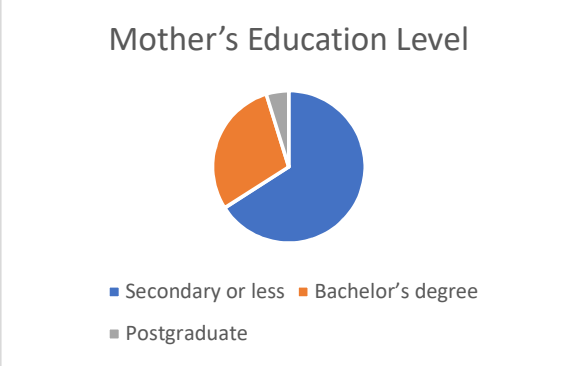
4.1. Participants' Demographic and Clinical Characteristics

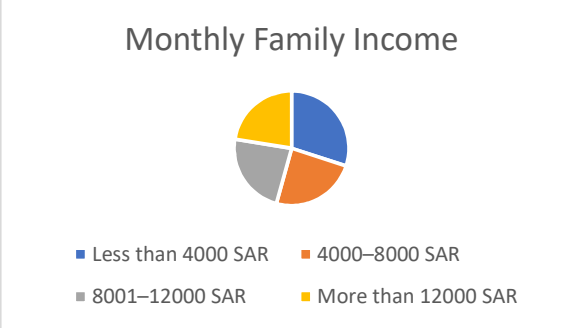
Table 1:Participants' Demographic and Clinical Characteristics

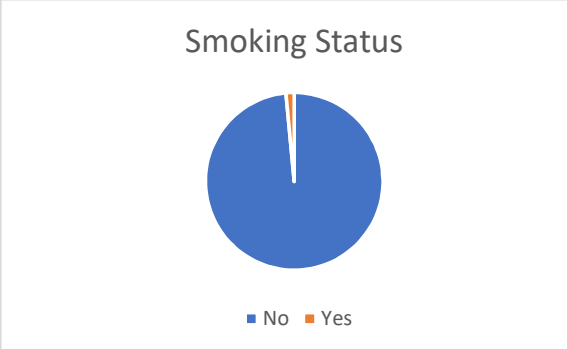
Variable	Category	Frequency (n)	Percentage (%)
Educational Level	High School	14	3.5%
	University	386	96.5 %
Father's Education Level	Secondary or less	230	57.5 %
	Bachelor's degree	119	29.8 %
	Postgraduate	51	12.8 %
Mother's Education Level	Secondary or less	264	66.0 %
	Bachelor's degree	117	29.3 %
	Postgraduate	19	4.8%
Monthly Family Income	Less than 4000 SAR	120	30.0 %
	4000–8000 SAR	97	24.3 %
	8001–12000 SAR	93	23.3 %
	More than 12000 SAR	90	22.5 %
Smoking Status	No	394	98.5 %
	Yes	6	1.5%
Field of Study (University Students)	Humanities	120	30.0 %
	Health	25	6.3%
	Scientific/Engineering	248	62.0 %
PMDD Diagnosis	No	360	90.0 %
	Not sure	40	10.0 %
	Mean	Std. Deviation	
Age (years)	5.36	2.530	
Age at menarche	9.01	4.102	
Weight	13.18	7.604	
Height	9.42	4.413	

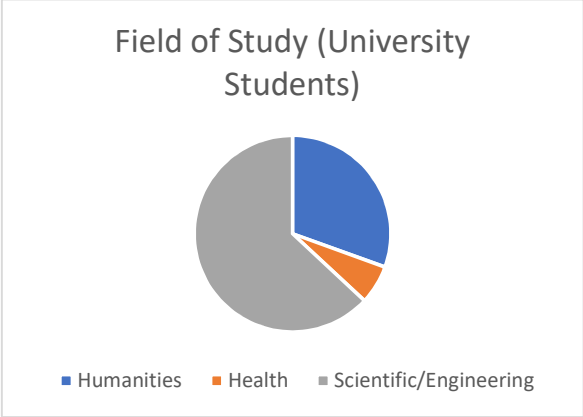


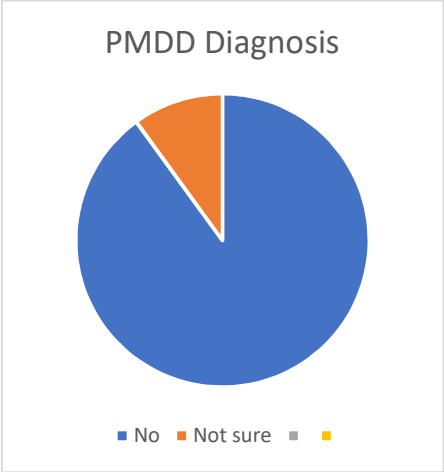












The demographic attributes of the research participants indicate that by far most of the participants were university students (96.5) being 386 (n = 386) and only 3.5 (n = 14) were high school students. This shows that the sample was heavily composed of higher education students and this could be because of the ease of access or the desire to be involved amongst university students.

In terms of parental education, over half (57.5) of the fathers had a secondary education level or less with 29.8 and 12.8 having a bachelor and postgraduate degree respectively. Likewise, most mothers (66.0) had secondary education or less, 29.3% of them were bachelor degree holders with only a few (4.8) having postgraduate education. These data indicate that a fairly high percentage of interviewees belong to the families with middle to low education levels.

When it comes to monthly family income, 30.0% of the participants indicated having a monthly family income of less than 4000 SAR, and 24.3% indicated that their monthly family income was between 4000 and 8000 SAR. Also, 23.3 percent were between 8001 and 12000 SAR and 22.5 percent had a monthly income of more than 12000 SAR. It means that the distribution among income groups is rather balanced, although there

is minor concentration in the low-income category.

The findings also indicate that the overwhelming majority of the participants (98.5) were non-smokers with the remaining 1.5% reporting to be smokers. This indicates a much less prevalence of smoking in the sample of the study.

In terms of the university student field of study, most students were taking scientific or engineering courses (62.0%), then humanities (30.0%), and health courses (6.3%). This indicates an increased representation of the students in the scientific subjects in the sample.

In the PMDD diagnosis, the majority of participants (90.0) had not been diagnosed with premenstrual dysphoric disorder with 10.0% being inconclusive. This implies that there were no cases of clinically diagnosed PMDD or only minimal cases were reported in the sample.

Finally, the continuous variables show that the mean age of participants was 5.36 (SD = 2.530), the mean age at menarche was 9.01 (SD = 4.102), while weight and height had mean values of 13.18 (SD = 7.604) and 9.42 (SD = 4.413), respectively. These values seem to be coded or transformed data instead of raw clinical measurement and should be clearly established in the methodology section to be correctly interpreted.

4.2. Descriptive Statistics

Table 2 :Descriptive Statistics

Descriptive Statistics						
Variable	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Rank**
Anxiety or tension	400	2	5	3.25	0.903	5
Crying tendency or mood swings	400	2	5	3.40	0.739	2
Irritability or anger	400	2	5	3.33	0.770	4
Loss of interest in usual activities	400	2	5	3.39	0.919	3
Difficulty concentrating	400	2	5	3.15	1.118	8
Fatigue or low energy	400	2	5	3.22	0.714	6
Feeling overwhelmed or loss of control	400	2	5	3.18	0.842	7
Impact on academic, social, and daily life	400	2	5	3.40	0.971	1

Valid N (listwise)	400	—	—	—	—	

The descriptive analysis of premenstrual symptoms among the subjects indicates that there is a change in the severity and frequency of reported premenstrual symptoms according to the mean scores.

The top-ranked was impact on academic, social life, and daily life with the greatest mean score (Mean = 3.40), meaning that participants found the impact of premenstrual symptoms to have a significant impact on their daily functioning. This was closely nexted by crying tendency or mood swings that had a high mean score (Mean = 3.40) which was an indication of a strong emotional reaction in the premenstrual period.

The third rank was loss of interest in regular activities (Mean = 3.39) which indicated a significant drop in motivation and interest in daily routine. Irritability or anger was fourth (Mean = 3.33), which demonstrates that emotional instability was common among the participants with anxiety or tension coming fifth (Mean = 3.25), showing moderate psychological distress.

Fatigue or lack of energy came in the sixth place (Mean = 3.22), indicating that physical fatigue is also a frequent symptom. Next, there was the feeling overwhelmed or loss of control (Mean = 3.18) in the seventh rank, indicating that some respondents have problems in coping with emotional pressure at this time.

Lastly, the least intense symptom was difficulty concentrating (Mean = 3.15), which means that the cognitive problems exist, but they are not as significant as other symptoms reported.

All the results suggest that emotional and functional effects of premenstrual symptoms are more notable than cognitive symptoms in the study participants.

4.3. Testing:

- **There is a statistically significant difference in premenstrual symptoms (PSQ-S scores) between high school and university students.**

Group Statistics					
	Educational Level	N	Mean	Std. Deviation	Std. Error Mean
PSQ-S score	high school	14	3.8000	.00000	.00000
	University	386	3.7402	.58445	.02975

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PSQ-S score	Equal variance	17.215	.000	.383	398	.702	.05984	.15639	-.24761	.36730

	ces assumed									
	Equal variances not assumed			2.012	385.000	.045	.05984	.02975	.00136	.11833

The independent samples t-test findings were analyzed to determine whether the mean difference (PSQ-S scores) among high school and university students is statistically significant in terms of premenstrual symptoms.

The statistics of the group indicate that high school students had a slightly better mean PSQ-S score (Mean = 3.80, SD = 0.00) than the university students (Mean = 3.74, SD = 0.58). It is, however, worth noting that the sample population of high school students was very small (n = 14) and this could affect the reliability and variability of this estimate.

The test of equality of variances (Levene) showed a statistically significant value (F = 17.215, p = 0.001) before interpretation of the t-test results, implying that the assumption of the same variances was not met. Therefore, the results of the "equal variances not assumed" row were considered more appropriate for interpretation.

Based on the corrected t-test results, there was a statistically significant difference in PSQ-S scores between high school and university students (t = 2.012, df = 385, p = 0.045). The mean difference was 0.05984, which means that the high school students had reported a higher score on the premenstrual symptom scale than the university students.

Thus, the results confirm the hypothesis of the research, stating that the level of education plays a significant role in the differences in premenstrual symptoms. The difference between the two groups is however quite small implying that, even though statistically significant, the practical difference can be minimal.

- **There is a statistically significant relationship between age and premenstrual symptoms (PSQ-S scores).**

Table 3:Relationship Between Age and Premenstrual Symptoms (PSQ-S Scores)

Variable	**Age (years)**	**PSQ-S Score**
Age (years)		
Pearson Correlation	1	0.343**
Sig. (2-tailed)	—	0.000
PSQ-S Score		
Pearson Correlation	0.343**	1
Sig. (2-tailed)	0.000	—
**. Correlation is significant at the 0.01 level (2-tailed).		

The analysis was done using Pearson correlation analysis to test the relationship between age and premenstrual symptoms (PSQ-S scores) of the study participants. The findings showed that the correlation between age and PSQ-S scores was statistically significant (r = 0.343, p < 0.001). This implies that the relationship between the two variables is medium positive with the increasing age implying that premenstrual symptom scores are more likely to increase in the sample. The findings can thus be said to support the research hypothesis which was that there exists a statistically significant relationship between the age and the premenstrual symptoms (PSQ-S scores). The correlation coefficient shows that the relationship is reasonably strong and the level of significance (p < 0.001) indicates that the outcome is statistically significant and not a chance occurrence. In general, the results indicate that the participants who are older are likely to report a little bit more premenstrual symptoms than those who are younger in the study sample.

- **Premenstrual symptoms significantly affect academic performance, social interactions, and daily activities.**

Table 4:Impact of Premenstrual Symptoms on Academic, Social, and Daily Activities

Variable	PSQ-S Score	Impact on Daily Life
PSQ-S Score		
Pearson Correlation	1	0.272**
Sig. (2-tailed)	—	0.000
N	400	400
Impact on Daily Life		
Pearson Correlation	0.272**	1
Sig. (2-tailed)	0.000	—
N	400	400

A Pearson correlation test was used to test the relationship between premenstrual symptoms (PSQ-S scores) and their effects on academic performance, social interactions and everyday activities of the participants of the study. The findings indicated statistically significant positive association between PSQ-S scores and the impact on the daily life ($r = 0.272$, $p < 0.001$). This shows that the two variables have weak-moderate positive relationship with each other, meaning that an increase in premenstrual symptoms correlates with a negative influence on the academic, social and daily functioning of participants. Based on this, the results corroborate the research hypothesis that premenstrual symptoms have a considerable impact on academic performance, social interactions, and daily activities. This relationship is unlikely to be due to chance, with the statistical significance ($p < 0.001$) associated with it, whereas the strength of a correlation indicates a minor yet significant relationship. On the whole, these findings suggest that the extent of interference in everyday life activities among the participants of the study also grows with the severity of premenstrual symptoms.

- **Premenstrual symptoms differ significantly according to family income and parental education levels.**

Table 5 :Differences in Premenstrual Symptoms According to Socioeconomic Factors

Variable	Source of Variation	Sum of Square	Df	Mean Square	F	Sig.
Father's Education Level	Between Groups	49.131	20	2.4567	6.135	0.000
	Within Groups	151.766	379	0.4000	—	—
	Total	200.897	399	—	—	—
Mother's Education Level	Between Groups	57.507	20	2.8755	14.447	0.000
	Within Groups	75.431	379	0.1999	—	—
	Total	132.938	399	—	—	—
Monthly Family Income	Between Groups	91.468	20	4.5733	4.5331	0.000

	Within Groups	382.509	379	1.009	—	—
	Total	473.977	399	—	—	—

One-way ANOVA test was used to test the hypothesis that there is a significant difference in premenstrual symptoms (PSQ-S scores) between family income and the level of parental education of the participants of the study.

The findings revealed statistically significant differences in the PSQ-S scores, depending on the level of education of the father ($F = 6.135$, $p < 0.001$). This shows that the severity of premenstrual symptoms can be significantly different in various groups of fathers by their level of education.

In the same way, there was a statistically significant difference by mother education ($F = 14.447$, $p < 0.001$) indicating that premenstrual symptoms of the participants varied between mother with higher education level and those with lower education level. The F-value of mother education is relatively high, which means that the level of symptom variation is stronger in the groups in relation to father education.

Moreover, monthly family income also correlated with premenstrual symptoms to a great extent ($F = 4.531$, $p = 0.001$). This observation indicates that household income as a socioeconomic factor is significant in the difference in the severity of symptoms among participants.

In sum, these results confirm the hypothesis of the research that premenstrual symptoms vary largely based on the family income and the level of parental education. These statistically significant p-values ($p < 0.001$) in all variables support that these differences are not likely to be a result of randomness, but instead suggest the impact of socioeconomic factors on the experience of premenstrual symptoms.

- **Premenstrual symptoms are significantly associated with age at menarche .**

Table 6:Premenstrual symptoms are significantly associated with age at menarche

Variable	**PSQ-S Score**	**Age at Menarche**
PSQ-S Score		
Pearson Correlation	1	0.890**
Sig. (2-tailed)	—	0.000
N	400	400
Age at Menarche		
Pearson Correlation	0.890**	1
Sig. (2-tailed)	0.000	—
N	400	400

The study participants were analyzed using Pearson correlation analysis to test the relationship between premenstrual symptoms (PSQ-S scores) and age at menarche. The findings showed that there was a statistically significant positive correlation between age at menarche and PSQ-S scores ($r = 0.890$, $p < 0.001$). This shows a very strong positive correlation between the two variables, which implies that the differences in the age at which menstruation started are strongly connected with the difference in the severity of the premenstrual symptoms. Based on this, the results confirm the research hypothesis which was that age at menarche is significantly related to premenstrual symptoms. The highly positive correlation coefficient indicates that the two variables are strongly correlated, whereas the level of significance ($p < 0.001$) shows that the correlation between the two variables is statistically significant and cannot have been due to chance. On the whole, these findings suggest that age at menarche is a significant variable related to the severity of premenstrual symptoms in the participants of the study.

- **Independent variables significantly predict premenstrual symptoms (PSQ-S scores).**

Table 7:Multiple Linear Regression Analysis

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.405	0.164	0.145	0.46979
Predictors include age, father's education level, mother's education level, monthly family income, smoking status, field of study, weight, and height.				

ANOVA					
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**

Regression	15.777	8	1.972	8.936	0.000
Residual	80.555	365	0.221	—	—
Total	96.333	373	—	—	—
Dependent Variable: PSQ-S score					
Predictors: age, father's education, mother's education, income, smoking, field of study, weight, height					

Coefficients					
Variables	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	2.364	0.550	—	4.299	0.000
Age (years)	0.068	0.014	0.333	4.868	0.000
Father's education level	0.025	0.040	0.034	0.617	0.537
Mother's education level	-0.183	0.049	-0.199	-3.766	0.000
Monthly family income	0.086	0.025	0.185	3.492	0.001
Smoking status	0.419	0.213	0.104	1.970	0.050
Field of study	0.035	0.036	0.067	0.970	0.333
Weight (kg)	-0.001	0.004	-0.016	-0.301	0.764
Height (cm)	0.015	0.006	0.131	2.560	0.011
Note: Dependent Variable: PSQ-S score					

Multiple linear regression was performed to establish whether the chosen independent variables have significant predictive power of premenstrual symptoms (PSQ-S scores) among the respondents in the study.

The model summary indicated that the regression model, which included all the variables, has a correlation coefficient of R = 0.405 and R 2 = 0.164 and adjusted R 2 = 0.145. This suggests that the overall effect of the independent variables in the model (age, parental education, family income, smoking status, field of study, weight and height) explains about 16.4 percent of the variation in premenstrual symptoms.

The results of the ANOVA proved that the regression model was significant ($F = 8.936$, $p < 0.001$), which means that the predictors, in combination, play an important part in explaining differences in PSQ-S scores.

On the individual predictors (coefficients), age was discovered to be a strong positive predictor of PSQ-S scores ($B = 0.068$, $p < 0.001$), indicating that older age is related to more premenstrual symptoms. There was also a very strong positive correlation with the monthly family income ($B = 0.086$, $p = 0.001$), which means that the level of income determines the severity of symptoms.

The level of mother education was statistically significantly negatively correlated with PSQ-S scores ($B = -0.183$, $p = 0.001$), and higher maternal education is positively correlated with less severe symptoms. There was also a marginal significance in smoking status ($B = 0.419$, $p = 0.050$), which could be an indication of a positive correlation with more symptoms.

Furthermore, height was identified to be statistically significant positive predictor ($B = 0.015$, $p = 0.011$) whereas father education level, field of study, and weight were not statistically significant predictors of PSQ-S scores.

All in all, these results are in line with the research hypothesis, which states that independent variables are collective and partial predictors of premenstrual symptoms. Nevertheless, the value of R2 is rather low that indicates that there are other unexplored factors which can also contribute to the severity of symptoms.

5. Discussion

The present study examined premenstrual symptoms among high school and university students in Taif City, Saudi Arabia, with the aim of identifying their prevalence, severity, and associated demographic and clinical factors. The

findings provide insight into how these symptoms are experienced and how they influence the daily functioning of young females in an academic setting.

The results on the demographic and clinical characteristics of the participants in the current study are mostly compatible with other literature on premenstrual symptoms in adolescent and young adult females. The sample being dominated by university students is typical of many similar studies which have been reported including Rani et al. (2025) and Sevil Şahin et al. where accessibility and willingness to participate in health-related surveys was more prevalent among university populations. This exaggeration of higher education students might also indicate that this group is more aware of the health concerns about menstruation. Moreover, the extremely low prevalence of smoking participants also is consistent with other studies conducted by Buddhabunyakan et al. (2017) and Bakhshani et al. (2009) who also reported that smoking is not widespread among young female students and reduces its impact as a significant confounding variable in PMS-related studies in this demographic.

As far as socioeconomic attributes are concerned, the recent results found that a significant percentage of the sample belonged to the families with moderate and lower educational backgrounds and comparatively variable income levels. This trend is supported by the earlier research by Gul Pinar et al. and Salem et al. (2020) who underlined that socioeconomic factors, such as parental education and household income, are important determinants of women health outcomes and the degree of premenstrual symptoms. Less parental education can be linked with a lack of knowledge on how to manage menstrual health, whereas income differences can be linked with the access to healthcare facilities, nutritious diets, and stress levels, which can also lead to symptoms variations. Such results support the idea that premenstrual symptoms cannot be regarded as a biological phenomenon, but as a multidimensional condition, in which social determinants of health play a role.

Regarding symptom patterns, the present research proved that emotional and functional symptoms manifested the most of the time among the participants especially mood swings, tendency to cry, the loss of interest in normal activities, and the perceived effect on academic, social, and daily functioning. These results closely agree with prior studies by Schoep et al. (2019a) and Lerser et al. (2016) who found that emotional instability and psychological distress are some of the most debilitating components of premenstrual symptoms. Likewise, Schoep et al. (2019b) and De Sanctis et al. (2016) emphasized that such symptoms have a great influence on an academic performance, lack of concentration, and poor social participation. The similarity of the current findings to the prior ones indicates that burden of premenstrual symptoms is not limited to physical discomfort but also to considerable psychological and functional impairment that has a direct impact on quality of life and productivity.

The current study, in terms of testing hypothesis, revealed that the statistically significant difference in PSQ-S scores between high school and university students was found. The difference in the mean scores between the high school students was relatively small, although the highest scores were reported by them. To some extent, this result is aligned with that of Ranjbaran et al. (2017), who also have found differences in the severity of PMS among different levels of education and age groups. Nonetheless, the somewhat small difference in the current study indicates that the educational stage is perhaps not a powerful factor of symptom severity. In its turn, it can interplay with other biological and psychosocial variables, which jointly influence the experience of the symptoms. Moreover, the positive age-premenstrual symptoms correlation in this study is parallel with the results obtained by Bakhshani et al. (2009) who presented that variations with age can alter the perception and severity of PMS symptoms. The moderate positive correlation indicates that older participants are more likely to report a higher severity of symptoms, and this will be explained by hormones, psychological factors, or lifestyle changes accumulating over time. But this relationship is not consistently validated in all studies with some literature proposing that younger females might have more severe symptoms because of hormonal fluctuation or absence of coping mechanisms, and that age effects can be context-dependent and depend on other moderating factors.

Moreover, previous studies have solidly confirmed the great connection between premenstrual symptoms and their effect on academic, social and daily functioning. Schoep et al. (2019a) and Lerser et al. (2016) studies highlighted that a higher level of symptoms was directly associated with decreased functional performance and social withdrawal. The current results support this fact by showing that the higher the PSQ-S scores, the more disruption in the activities of daily life, which points to the functional burden of premenstrual symptoms. This connection highlights the need to treat PMS not merely as a clinical issue but also as an educational and social one which impacts on the general productivity and well-being of students.

In addition, the significant differences in premenstrual symptoms based on the family income and the level of parental education observed are consistent with the results of Gul Pinar et al. and Arif (2016) who reported the socioeconomic factors to be significant in both the prevalence and severity of PMS. According to these studies, people with lower socioeconomic status might have increased stress levels, worse health behaviors and lesser access to health care services, which can worsen premenstrual symptoms. Equally, increased parental education could be linked to an increase in health awareness and improved coping mechanisms, which could help to reduce the severity of symptoms.

Another interesting result of the current research is the high positive correlation between age at menarche and PSQ-S scores. This finding aligns with that of Rani et al. (2025) who also found that menarche timing could also predict the severity of premenstrual symptoms. The high correlation in the present study indicates that the earlier or later menstrual onset can have long-term physiologic or hormonal consequences that can affect symptom patterns during later adolescence and early adulthood. This underscores the need to take into consideration the reproductive developmental history when evaluating premenstrual symptomatology.

Lastly, the multiple regression revealed that a set of demographic and biological factors significantly predicts premenstrual symptoms, albeit with a rather low explained variance. The result concurs with Rani et al. (2025) and Mostafa Rad et al. whose study indicated that PMS is a multifactorial disorder that is triggered by the mix of biological, psychological, and environmental factors. The current study confirms that age, maternal education, income level, smoking status, and height contribute significantly to symptom prediction; however, the relatively low R^2 value suggests that additional unmeasured variables—such as stress levels, dietary habits, physical activity, and genetic predisposition—may also play an important role. This underscores the complexity of premenstrual symptoms and the need for future research to adopt more comprehensive models that integrate both biological and lifestyle-related factors.

6. Conclusions

This study suggests that premenstrual symptoms are very common among female students and are largely manifested by emotional and functional problems that include mood swings, tendency to cry, irritability, loss of interest in normal activities and decreased academic and social performance. The symptoms were observed to significantly affect the day-to-day life of the students, especially in terms of academic performance and social life.

The findings also show that demographic factors, socioeconomic factors and biological factors interact to cause premenstrual symptoms. Close correlations were noted with age and age at menarche, education levels of parents or monthly family income, indicating the relevance of social and biological factors to influence the severity of symptoms.

Moreover, the regression analysis supported the fact that premenstrual symptoms are multifactorial. The chosen independent variables had a significant predictive value of PSQ-S scores yet the explanatory power of the model was fairly low, which indicates the possibility of other unmeasured variables contributing to the severity of symptoms. In general, the paper has determined that premenstrual symptoms are a complicated health problem that is determined by the interplay of biological, social, and environmental factors.

7. Recommendations

The research proposes that organized health education in schools and universities should be undertaken to raise awareness levels regarding premenstrual symptoms and causes, as well as, coping mechanisms. The goals of such programs should include enhancing the knowledge of the students about menstrual health and decreasing the stigma of talking about these symptoms.

It is also advisable that health facilities in schools should enhance their mandate in early screening, counseling and psychological support of students with moderate to severe premenstrual symptoms. Early diagnosis of the affected students can be beneficial to mitigate the adverse effects on academic performance and social functioning.

The students with low socioeconomic status should be given particular attention because the level of parental education and family income were observed to correlate with the severity of the symptoms. Individualized interventions like stress management interventions, nutritional counseling and health education can be used to decrease disparities in the experience of symptoms.

Lastly, other contributory factors like lifestyle habits, diet, physical activity, sleep, and psychological stress should be investigated in future studies. Longitudinal studies are also proposed to comprehend the evolution and lasting impacts of premenstrual symptoms.

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PREMENSTRUAL SYNDROME QUESTIONNAIRE

Full Patient Name: _____

Date: _____ Age: _____ Height: _____ Weight: _____

Present Contraception: ☐ ne ☐ I ☐ o ☐

History of Contraceptive Pills: ☐ yes ☐ Number of years: _____

Please rate the following symptoms according to the degree of severity with which you experience them. Please also indicate when you experience symptoms.

1 = Mild 2 = Moderate 3 = Severe				**Week Before Period**	**Week After Period**	**Other**
PMS – A	(Circle one)			(Check one)		
Anxiety	1	2	3	☐	☐	☐
Irritability	1	2	3	☐	☐	☐
Mood Swings	1	2	3	☐	☐	☐
Nervous Tension	1	2	3	☐	☐	☐
PMS – C						
Appetite Increase	1	2	3	☐	☐	☐
Headache	1	2	3	☐	☐	☐
Fatigue	1	2	3	☐	☐	☐
Dizziness or Fainting	1	2	3	☐	☐	☐
Palpitations	1	2	3	☐	☐	☐

PMS – D

Depression	1	2	3	☐	☐	☐
Crying	1	2	3	☐	☐	☐
Forgetfulness	1	2	3	☐	☐	☐
Confusion	1	2	3	☐	☐	☐
Insomnia	1	2	3	☐	☐	☐

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1 = Mild 2 = Moderate 3 = Severe				**Week Before Period**	**Week After Period**	**Other**
PMS – H	(Circle one)				(Check one)	
Fluid Retention	1	2	3	☐	☐	☐
Weight Gain	1	2	3	☐	☐	☐
Swollen Extremities	1	2	3	☐	☐	☐
Breast Tenderness	1	2	3	☐	☐	☐
Abdominal Bloating	1	2	3	☐	☐	☐
OTHER SYMPTOMS						
Oily Skin		1	2	3	☐	☐	☐
Acne	1	2	3	☐	☐	☐
Constipation	1	2	3	☐	☐	☐
Diarrhea	1	2	3	☐	☐	☐
Backache	1	2	3	☐	☐	☐
Hives	1	2	3	☐	☐	☐
Weakness & radiation Down thighs	1	2	3	☐	☐	☐
DURING FIRST TWO DAYS OF PERIOD						
Menstrual Cramps	1	2	3	☐	☐	☐
Menstrual Backache	1	2	3	☐	☐	☐