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Article

Premenstrual Disorders Impact on Quality of Life

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Abstract

Background and Objectives: Premenstrual disorders (PMDs), including premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD), significantly affect women's health, daily functioning, and overall quality of life. This study aimed to highlight the broad impact of PMDs, raise awareness and identify key contributing factors. *Materials and Methods:* A specifically designed questionnaire was disseminated across Europe via social media platforms and electronic communication channels. Data were collected between November 2023 and November 2024. Responses were analyzed using R Commander software to identify significant correlations between lifestyle, health history, and PMD symptoms. *Results:* Statistically significant relationships were identified between lifestyle factors and both physical and psychological symptoms, as well as increased likelihood of PMS diagnosis ($p = 0.042$). Early menarche was associated with more severe menstrual symptoms ($p = 0.0128$), and irregular cycles correlated with higher rates of PMS, PMDD, and related symptoms. Notably, 66.2% of respondents reported PMDs negatively affected daily activities. Health conditions such as headaches, chronic pain, diabetes, thyroid disorders, gynecological issues, and mood disorders were significantly associated with PMS symptoms, including swollen breasts and food cravings. A family history of PMS and mood disorders was present in 29 participants, with 13 having formal diagnoses. *Conclusions:* PMDs substantially impair quality of life and are linked to a range of biological, psychological, and lifestyle factors. Findings suggest a potential genetic component and underscore the necessity for personalized, multifaceted diagnostic and treatment approaches. These results advocate for heightened societal awareness and improved clinical practices to address the wide-reaching impacts of PMDs.

Keywords: premenstrual disorders; premenstrual syndrome; mood disorders; menstrual disorders; stress and menstruation; therapeutic strategies

1. Introduction

Premenstrual disorders (PMDs) are prevalent conditions affecting millions of women worldwide, significantly disrupting their daily lives, affecting their physical, emotional, and psychological wellbeing [1]. Despite the high prevalence and impact, PMDs remain underdiagnosed and under researched [2–4]. In a recent study, Opatowski and colleagues reported that PMDs are associated with an increased risk of morbidity and mortality, including cardiovascular disease, neoplasms, and suicide, highlighting the importance for early diagnosis and treatment. Addressing the complexities of PMDs is essential for improving the diagnosis, treatment, and support systems for those affected.

The reported prevalence of PMDs varies widely across studies, with estimates ranging from 10% to 98% in different countries [5,6]. 75% of menstruating women worldwide experience some form of PMS symptoms, with 3–8% of these individuals suffering from severe PMS that significantly affects their daily functioning and quality of life [3,5,7,8]. Around 1.6% of menstruating women, which

translates to approximately 31 million women globally, based on estimates of the global population of menstruating women, experience severe premenstrual dysphoric disorder (PMDD) [6,9,10]. A recent systematic review of randomized controlled trials reported a PMDD prevalence of 3%-8%, while PMS has an estimated global prevalence of 48% [11,12]. Up to 20% of reproductive-aged women report experiencing premenstrual symptoms that lead to substantial functional impairment, highlighting the substantial impact these conditions have on women's daily lives, at home, in the workplace, and in social settings [13,14].

While the exact causes of PMDs remain unclear, they are believed to involve a combination of various risk factors, including hormonal fluctuations, genetic predispositions, neurotransmitter imbalances, and the individual sensitivity to these factors [15]. Hormonal changes, particularly during the luteal phase of the menstrual cycle, play a central role in the emotional and physical symptoms of PMDs, while neurotransmitter imbalances—especially serotonin dysregulation—contribute to mood disturbances, such as anxiety, irritability, and depression.

Women with PMDs experience a broad spectrum of both physical and psychological symptoms, ranging from mild irritability and bloating to severe mood swings, anxiety, and debilitating physical pain. Common physical manifestations include bloating, breast tenderness, headaches, muscle pain, fatigue, and food cravings [10,16,17]. PMDs significantly impair productivity, increase absenteeism in both workplaces and educational settings, and lower the overall quality of life for those affected [4,8,18–21]. Women with PMDs report taking significantly more days off per month compared to their counterparts without PMDs [18,22,23].

PMDs are diagnosed through a thorough medical assessment, including symptom history, menstrual cycle details, and exclusion of other conditions. Management involves a holistic approach, including lifestyle modifications, pharmacological treatments, and psychological support to alleviate symptoms [4]. It is essential to recognize PMDs as an interdisciplinary concern that intersects with multiple fields, including gynaecology, psychology, endocrinology, public health, and sociology [4,24–26].

This research seeks to deepen understanding of PMDs by exploring individual differences and their impact on women's health and quality of life. Ultimately, the goal is to reduce stigma, improve care, and lessen the societal and economic burden of PMDs, including lost productivity and healthcare costs.

2. Materials and Methods

This research implemented a cross-sectional, multi-national approach, encompassing various European countries. Data collection was facilitated through the distribution of an online questionnaire, which was disseminated electronically to female participants across Europe.

The inclusion criteria were limited to female residents of European countries, with no age restrictions or health limitations imposed. This methodology was employed to ensure a diverse and representative sample of the target population while maintaining geographical consistency within the European context.

A unique anonymous survey was designed to elicit information from participants regarding their menstrual cycles and associated symptomatology. The questionnaire predominantly consisted of multiple-choice questions, yes/no type questions, and a limited number of open-ended questions. The questionnaire comprised 39 questions, which aimed to assess participants' general health, the characteristics of their menstrual cycles, and the symptoms they experience throughout their cycles. It was structured into several sections, including general health, menstrual cycle characteristics, and symptomatology.

Statistical analyses were conducted using the R Commander software. To determine statistical significance, both Fisher's exact test and the Chi-square test for independence were utilized.

Generative artificial intelligence has been used for superficial text editing (grammar, spelling, punctuation).

3. Results

A total of 136 women participated in completing the questionnaire.

3.1. Demographic Overview

The majority of participants were between the ages of 21–30 years (49.3%), followed by those aged 31–40 years (36.0%), with the remaining 14.7% being older. In terms of occupation, most participants were students (48%), followed by individuals employed in healthcare (33%) and office environments (30%).

3.2. Health – Promoting Behavior

More than half (52.2%) of the participants reported not engaging in regular exercise or yoga, and 69.1% did not participate in meditation or prayer practices. Despite this, a substantial proportion (77.9%) self-identified as "rather healthy."

However, analysis of body mass index (BMI) revealed discrepancies between perceived and actual health status. According to WHO guidelines, 50% of participants had BMI values outside the healthy range (18.5–25 kg/m²): 9.6% were underweight (BMI <18.5), while 40.5% were overweight (BMI >25) (41). These discrepancies underscore the nuanced nature of health perceptions and emphasize the need for effective health education to enhance awareness and encourage healthier lifestyle choices.

Statistical analyses revealed that lack of physical activity had a significant impact on psychological symptoms. Women who did not exercise were more likely to experience anxiety ($p = 0.0027$). Similarly, those who did not engage in yoga, meditation, or prayer were more likely to report feeling more of breathlessness ($p = 0.013$) and were more frequently diagnosed with PMDs ($p = 0.042$).

3.3. Menstrual Characteristics: Cycle Regularity and Menarche

Most respondents (58.1%) reported experiencing menarche between the ages of 13–15. Among the 22 women who reported irregular menstrual cycles, frequency varied widely—from every 2–3 weeks to as infrequently as once every 3–4 months. Of the 20 women with irregular cycles included in analysis, 14 reported at least one diagnosed health condition such as PMS, PMDD, anxiety, or depression.

Irregular cycles were significantly associated with an increased likelihood of PMS, PMDD, and psychological symptoms. This suggests a relationship between menstrual irregularity and underlying health concerns, warranting further investigation into potential causal mechanisms.

A significant relationship was also found between the age of menarche and specific PMD symptoms. When grouped into two categories—menarche before and after age 15—women who began menstruating earlier were more likely to experience food cravings ($p < 0.001$). Additionally, the severity of menstrual bleeding was significantly associated with the age of menarche ($p = 0.0128$), with those beginning menstruation before age 12 more likely to report moderate menstrual cycles.

3.4. Symptoms and Functional Impact

Participants were asked to report physical (e.g., headaches, leg/back pain, abdominal discomfort) and psychological (e.g., low mood, emotional sensitivity, appetite changes) symptoms during different phases of the menstrual cycle. A total of 52.6% experienced symptoms even outside the menstrual period, while 43% reported experiencing symptoms regularly and 33.3% experienced them monthly.

When asked about the impact of symptoms on daily life: 43 participants reported low motivation throughout the day, 12 noted that pain severely impaired their ability to work, 16 managed tasks with difficulty, 10 struggled to concentrate on work. Overall, 66.2% of respondents indicated that PMD symptoms negatively affected their daily activities.

Although 53.7% of respondents searched for information online regarding their symptoms, 70.6% had not consulted a healthcare professional. Among those who did seek care, 31 visited a gynecologist, 8 consulted a family doctor, and only 1 saw a psychologist.

3.5. Health Conditions and Symptom Correlations

The survey included questions about participants' medication use for various health conditions, including headaches or migraines, chronic pain, allergies, asthma or COPD, hypertension, diabetes, thyroid conditions, autoimmune disorders, gynaecological problems, mood disorders, vitamin deficiency, and others. Each condition was analysed in order to find if there is any statistically significant relationship between conditions and psychological or physical symptoms. The statistically significant results are listed below:

- Women who have headaches or migraines are more likely to experience painful/swollen breasts ($p < 0.0001$) and excessive food cravings ($p = 0.0054$) during PMDs.
- Women who have chronic pain are more likely to experience painful/swollen breasts ($p < 0.0001$) and excessive food cravings ($p = 0.045$) during PMDs.
- Women who have allergies are more likely to experience painful/swollen breasts ($p = 0.036$) during PMDs.
- Women who have diabetes are more likely to experience painful/swollen breasts ($p\text{-value} = 0.036$) during PMDs.
- Women who have been diagnosed thyroid condition are more likely to experience painful/swollen breasts ($p < 0.0001$) during PMDs.
- Women who have autoimmune disorders are more likely to experience painful/swollen breasts ($p = 0.049$) and breathlessness ($p = 0.020$) during PMDs.
- Women who have gynaecological problems are more likely to experience painful/swollen breasts ($p < 0.0001$) and excessive food cravings ($p = 0.005$) during PMDs.
- Women who have mood disorders are more likely to experience painful/swollen breasts ($p\text{-value} < 0.001$) during PMDs.
- Women who have vitamin deficiencies are more likely to experience excessive food cravings ($p\text{-value} = 0.003$), breathlessness ($p < 0.0001$), and painful/swollen breasts ($p < 0.0001$) during PMDs.

These findings indicate that underlying health conditions may exacerbate PMD symptoms and underscore the importance of comprehensive health assessments in managing these disorders.

3.6. Low Energy and Motivation

A significant majority (92%) of participants reported experiencing low energy or lack of motivation. Nearly half (48%) experienced these symptoms monthly, while others reported seasonal or irregular occurrences. A statistically significant relationship was identified between PMDs and low energy/motivation ($p = 0.0247$), suggesting these symptoms are prominent features of PMDs.

3.7. Symptom Management Strategies

As part of the survey, participants were asked about their current methods of managing PMDs symptoms as well as their preferences regarding future treatment options. The most common strategies included: medication (47.3 %), supplements (18.1 %), exercise (6.9 %). This highlights a reliance on pharmacological solutions, with fewer individuals using lifestyle-based interventions.

3.8. Family History of PMDs

To investigate the potential genetic or familial component of PMDs, participants were asked about their family history. A total of 29 participants reported a family history of PMS, PMDD, or mood-related disorders. Among them, 13 women were formally diagnosed with related conditions: 7 with mood disorders, 3 with PMDs, and 3 with both. The remaining 16 had a familial predisposition

but no personal diagnosis. These findings suggest a possible hereditary link between family history and susceptibility to PMDs and associated mood disorders.

4. Discussion

This study investigated the impact of premenstrual disorders (PMDs) on women's health and quality of life, revealing significant associations between PMD symptoms, lifestyle habits, and health conditions. Despite a relatively small sample size (n=136), the results align with existing literature and contribute to understanding the burden of PMDs on women's daily functioning.

Consistent with previous studies [3,27], participants reported a wide range of physical and psychological symptoms—including mood swings, anxiety, and breast pain—that significantly disrupted daily life. While 66.2% of participants reported a negative impact, other studies have reported higher rates (up to 90%) [28,29], likely due to differences in methodology, population demographics, or diagnostic criteria.

Although most participants experienced moderate to severe symptoms, only a minority had received a formal diagnosis. This finding reflects widespread underdiagnosis, as seen in previous research [28,30], and highlights the need for improved clinical screening and awareness. Additionally, many participants relied on self-management strategies such as medication, exercise, or supplements, a trend also documented in earlier studies [3].

This study also identified a discrepancy between self-reported health status and objective indicators such as BMI and health behaviors. These inconsistencies may stem from questionnaire limitations or misinterpretation of questions, a common issue in survey-based research [11]. Improving clarity in future survey designs is essential.

The association between early menarche, irregular cycles, and symptom severity supports findings from earlier studies suggesting hormonal and biological underpinnings of PMDs. Similarly, a reported family history of PMS or mood disorders among affected individuals suggests a potential genetic component, consistent with prior twin and family studies [31–33], although no specific genotype has been conclusively identified.

Several limitations must be acknowledged. The cross-sectional design precludes causal conclusions. Self-reported data may have introduced recall bias or inaccuracies. The questionnaire's design allowed unanswered questions, limiting data completeness. The lack of clinical diagnosis also affects the accuracy of prevalence estimates. Cultural stigma and reluctance to disclose symptoms may have contributed to underreporting.

5. Conclusions

This study confirms that premenstrual disorders (PMDs) significantly impact women's quality of life, daily functioning, and mental well-being. Key factors associated with PMDs include early menarche, irregular cycles, stress, trauma, and certain health conditions. Lifestyle practices such as exercise, yoga, and meditation were linked to reduced symptom severity.

Despite the high symptom burden, few women receive formal diagnoses or seek medical support, highlighting a gap in awareness and healthcare access. Future research should include clinical assessments and longitudinal studies to improve diagnosis and care. Public health efforts must prioritize awareness, reduce stigma, and support personalized treatment approaches.

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Abbreviations

The following abbreviations are used in this manuscript:

PMS	Premenstrual syndrome
PMDs	Premenstrual disorders
PMDD	Premenstrual dysphoric disorder
BMI	Body mass index
WHO	World Health Organization

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