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Modeling premenstrual syndrome based on quality of life with the mediating role of early maladaptive schemas

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A B S T R A C T

Objective: The present study aimed to model premenstrual syndrome based on quality of life with the mediating role of early maladaptive schemas.

Methods and Materials: The research method is a cross-sectional correlation. The statistical population of this research comprised all married students of Azad University of Tehran in the fall and winter of 2020-2021; among them, 400 people were selected by staged cluster sampling method. In this study, the tools of premenstrual syndrome (Siah Baz et al., 2011), health-related quality of life (Walker et al., 1987) and early maladaptive schemas (Young, 1988) were used, all of which have acceptable validity and reliability. SPSS-V23 and Amos-V8.8 software were used to analyze the data. Structural equation modeling was also used to answer the research hypotheses.

Findings: Findings showed that the model maintains a good fit. The results also showed that health-related quality of life had a significant direct negative effect on premenstrual syndrome. Health-related quality of life has had a direct negative effect on early maladaptive schemas. Early maladaptive schemas had a direct effect on premenstrual syndrome.

Conclusion: The level of premenstrual syndrome increases with the increase of early maladaptive schemas. Therefore, paying attention to the mentioned variables in prevention and designing more appropriate treatments helps researchers and therapists.

Keywords: *Premenstrual syndrome, Health-related quality of life, early maladaptive schemas.*

1. Introduction

Throughout the life, humans face physiological, psychological, and familial cycles, some of which are inherent to their survival, while others are under their control and experience (Pirzadeh & Parsakia, 2023). The phenomenon of menstruation is part of the physiological cycles that cause fertility in women's lives. In the process of daily life, many issues affect the quality of life, physical and mental conditions, and individual interactions, which due to

their repetition, the importance of these issues is overlooked or underestimated. One of these issues is premenstrual syndrome (Teimouri, Zalipour, & Yazdanbakhsh, 2017). When talking about a syndrome, a mixture of various symptoms is considered that occur together and involve several organs and organs in the body (Siminiuc & Ţurcanu, 2023). Premenstrual syndrome, due to the influence of physical and psychological aspects and the subsequent social and interactive backgrounds, challenges the affected person in the relevant areas (Ayaz-Alkaya, Yaman-Sözbir, & Terzi, 2020). Cao et al. (2020) state that emotional symptoms of premenstrual syndrome are often problematic and can have widespread effects on women's work and family and social life (Cao et al., 2020). Women, especially married women, due to their important role in the family and their corresponding responsibilities, such as being a spouse and mother, endure a lot of pressure to maintain their physical and mental conditions and perform family, educational, and occupational duties satisfactorily. Sometimes the intensity of the effects of this syndrome is such that it disrupts the individual's daily activities during this period and prevents them from performing even the minimum tasks and duties (Chen, Imai, & Zhou, 2023). In a study of 100 women with premenstrual syndrome regarding behavioral disorders, a 27.5% decrease in job performance, 22.1% in work communications, 82.8% in marital conflicts, 61% in conflicts with children, and 41.5% in social relationships were observed (Acikgoz, Dayi, & Binbay, 2017). There is now sufficient documented evidence that physical illness has a significant impact on family functioning and that family beliefs and therapy affect the physical and mental health of its members (Zarei & Bazzazian, 2015). If premenstrual syndrome is considered as a disease in moderate and severe forms, examining and improving its effects on the family is also necessary (Takeda, 2023).

Since this cycle occurs approximately every 30 to 40 years in women's lives, it affects many physical, psychological, and social dimensions, which means that the quality of women's lives is affected by the menstrual cycle (Victor et al., 2019). Therefore, understanding and gaining awareness about premenstrual syndrome (PMS) requires identifying features in individuals that are somewhat related to this syndrome, in addition to examining various causes. It seems that the quality of life related to health and early maladaptive schemas is related to PMS, and with awareness of how and to what extent these relationships exist, necessary interventions can be implemented for effective impact and improvement. Additionally, PMS is an unpredictable condition that can affect women from puberty to menopause. Some women experience very mild symptoms that simply act as a warning sign for menstruation, but others experience severe and disabling symptoms that greatly affect their health-related quality of life and personal relationships (Uran et al., 2017). In a study that examined PMS in women, the results showed that negative mood had the highest score, followed by pain, impaired concentration, behavioral changes, and automatic reactions. The most common symptoms experienced with PMS are discomfort, sensitivity, abdominal pain, back pain, and restlessness (Jang & Sung, 2018). This means that this syndrome affects the health-related quality of life of women. In fact, an inappropriate lifestyle and neglect of health behaviors are factors that can create a basis for the onset of severe PMS (Kapelios et al., 2017). As Kustriyanti and Rahayu (2020) showed in their study on evaluating PMS and health-related quality of life among women, PMS has an impact on their health-related quality of life (Kustriyanti & Rahayu, 2020). Additionally, in a study aimed at analyzing the frequency of PMS and its effect on the health-related quality of life of students, the results showed that the most frequent symptoms were abdominal swelling, irritability, and breast tenderness. Alcohol consumption, stressful events, and a high-calorie and high-fat diet increase the severity of this syndrome. Family history significantly affects PMS and health-related quality of life. PMS has been found as a recurring issue among women and appears to have an impact on their quality of life (Karpagavalli & Rani, 2020).

On the other hand, a review of research indicates that in recent years, increasing attention has been paid to theories that seek to identify and introduce effective cognitive processes in premenstrual syndrome. One of the individual and cognitive factors considered as a mediating variable in this study is schemas (Borges & Dell'Aglio, 2020), which are mainly formed in childhood based on reality or experience and remain constant throughout life. This structure forms the basis of individual cognitive constructs and as an intermediary, influences individuals' behavioral responses (Teimouri, Zalipour, & Yazdanbakhsh, 2017). According to the schema perspective, most communication problems experienced by individuals are influenced by their perception of themselves and others, which is called cognitive schema (Zeynel & Uzer, 2020). Early schemas are beliefs that individuals have about themselves, others, and the environment, and usually stem from unmet primary needs, especially emotional needs, in childhood. They may

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be the main cause of personality disorders, mild cognitive impairment, and some chronic disorders. These schemas help individuals organize their experiences about the world around them and process received information (Thimm, 2017). Research has shown that the activation of early maladaptive schemas increases the severity and symptoms of premenstrual syndrome in women (Bilge & Balaban, 2021). On the other hand, the results of the research by Bach, Lockwood, and Yang (2018) showed that the basis of any pathology is one or more schemas. Adults with marital problems activate more early maladaptive and inhibitory schemas (Bach, Lockwood, & Young, 2018). The nature of incompatible schemas usually appears when individuals act in a way that confirms their schemas in their life process and in interaction with others, especially in marital relationships, even if their initial interpretation is incorrect (Gong & Chan, 2018). Ashian (2015) also showed in his research that quality of life aspects are negatively related to maladaptive schemas, and schemas such as emotional deprivation, distrust, underdeveloped self, failure, and insufficient self-control negatively predict overall quality of life (Ashian, 2015).

Regarding the theoretical importance of the research, it can be said that Premenstrual Syndrome (PMS) is a psychological and behavioral disorder that disrupts family and social relationships. Sometimes the symptoms of PMS are so severe that they cause psychotic attacks with personality changes and nervous outbursts, which can create problems for individuals and their surroundings and lead to absenteeism from work and education. This is detrimental to society and therefore requires investigation. In addition, it incurs direct health costs and indirect costs related to reduced work efficiency and productivity. Considering the average to high prevalence of this syndrome and the impact of lifestyle and environmental stressors on its occurrence and severity, as well as its negative effects on the individual and social functioning of affected individuals, and the fact that women are in a period of life where a decrease in their quality of life can have undesirable effects on their future and, of course, society, understanding early maladaptive schemas and their effects on the quality of life related to women's health is important to investigate. In terms of practical importance, all female students, psychologists, and therapists working in mental health service centers, family counselors, can benefit from the results of this research. Therefore, the researcher is trying to answer the question: What is the relationship between PMS based on the quality of life related to health with the mediating role of early maladaptive schemas?

2. Methods and Materials

2.1. Study Design and Participants

The present research method was descriptive-correlational through structural equation modeling. The statistical population of the present study included all married students of Tehran's Azad universities in the fall and winter of 2020-2021. The sampling method in this study was a multi-stage cluster random sampling. Five Azad universities in Tehran were randomly selected, and then three faculties were randomly selected from each university, and finally, the questionnaires were distributed among the students in those classes. Considering the probable attrition, 400 individuals were selected as the research sample based on the entry and exit criteria (inclusion criteria: being married, individuals between 24 and 35 years old, living with a spouse, having been married for more than two years, having at least one child; exclusion criteria: having a shorter or longer menstrual cycle than 24 to 35 days or irregular cycles, being married for less than two years, not suffering from any psychological disorders (based on the questionnaires)). In the present study, ethical considerations such as obtaining a research permit from the research deputy of the university, introducing the researcher to the samples and explaining the research objectives and methods to the research units, the voluntary participation in the research and the right to withdraw from it, keeping all information obtained from individuals confidential, and distributing questionnaires anonymously with a designated code were observed. (It should be noted that due to the coincidence of the research execution with the COVID-19 pandemic and the online classes of the university, the questionnaires were completed online through coordination with the relevant university professors).

2.2. Measures

2.2.1. Premenstrual Syndrome

Premenstrual Symptom Screening Tool is a questionnaire developed by Sehhatie and colleagues (2011) that consists of 19 questions and two sections. The first section includes 14 questions related to emotional, physical, and behavioral symptoms, while the second section measures the impact of these symptoms on individuals' lives and includes five questions. Each question has four criteria: never, mild, moderate, and severe, which are rated on a scale of 0 to 3.

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To diagnose moderate or severe PMS, the following three conditions must be met: 1) at least one moderate or severe symptom from items 1 to 4, 2) at least four moderate or severe symptoms from items 1 to 14, and 3) at least one moderate or severe symptom in the impact section (last 5 items).

2.2.2. *Health-related Quality of Life*

Health-Promoting Lifestyle Profile by Walker and colleagues (1987) has high reliability and validity and has been tested in many countries worldwide. The Persian version of this questionnaire has been standardized in Iran and its validity and reliability have been confirmed (Mohammadi Zeidi, Pakpour Hajiagha, & Mohammadi Zeidi, 2011). This scale measures health-promoting behaviors in six dimensions: responsibility for health, physical activity, nutrition, spiritual growth, stress management, and interpersonal relationships. The questionnaire consists of 52 questions, which are rated on a 4-point Likert scale: never (1), sometimes (2), usually (3), and always (4). The total score range for health-promoting behaviors is between 52 and 208, and each dimension is calculated separately. Therefore, the score range for responsibility, nutritional status, spiritual growth, interpersonal relationships (36-0), and each dimension of stress management and physical activity (32-0) were considered. Higher scores indicate the adoption of healthier behaviors and lifestyles. In Walker and colleagues' (1987) study, the Cronbach's alpha coefficient for the total score of this questionnaire was reported as 0.94 (Walker, Sechrist, & Pender, 1987).

2.2.3. *Early Maladaptive Schemas*

The SQ-SF is a 75-item questionnaire developed by Young (1988) to assess 15 maladaptive schemas. It is scored on a 6-point Likert scale (1=completely untrue to 6=completely true) and measures early maladaptive schemas in the following domains: disconnection and rejection, impaired autonomy and performance, impaired limits, other-directedness, and overvigilance (Young, 1998). Numerous studies have demonstrated the validity and reliability of this questionnaire (Afshari & Esmaeili, 2016; Bilge & Balaban, 2021).

2.3. *Data analysis*

Data analysis was performed using SPSS-V23 and Amos-V7.80 software to analyze the questionnaire results. Structural equation modeling was also used to test the research hypotheses.

3. Findings and Results

From a demographic perspective, 5.14% of participants were undergraduate students, 66% were graduate students, and 5.19% were PhD students.

Table 1

Descriptive statistics (M= Mean; SD= Standard Deviation)

Variable	Mean	SD	Skewness	Kurtosis
Disconnection and rejection	43.46	6.10	-0.55	-0.68
Impaired autonomy and performance	43.40	6.20	-0.55	-0.72
Impaired limits	44.19	6.43	-0.97	0.21
Other-directedness	43.34	5.98	-0.55	-0.43
Overvigilance	44.11	6.38	-0.96	0.17
Health-related quality of life	128.58	20.13	-0.15	-1.62
PMS	27.41	4.47	0.44	0.32

Table 1 displays the mean, standard deviation, skewness, and kurtosis of the research variables. The results related to the indices of the model fit are presented in Table 2.

Table 2

The results of fit indices

Index	Value	Cutoff point
$\frac{\chi^2}{df}$	2.11	< 3
RMSEA	0.04	< 0.1
CFI	0.96	> 0.9
NFI	0.95	> 0.9
GFI	0.96	> 0.9
AGFI	0.94	> 0.9

According to Table 2, the values obtained for these indices indicate that, overall, the model is in a suitable position for explanation and fit. Therefore, the mediating role of early maladaptive schemas is confirmed. The direct effects of the research variables are reported in the table below.

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Table 3

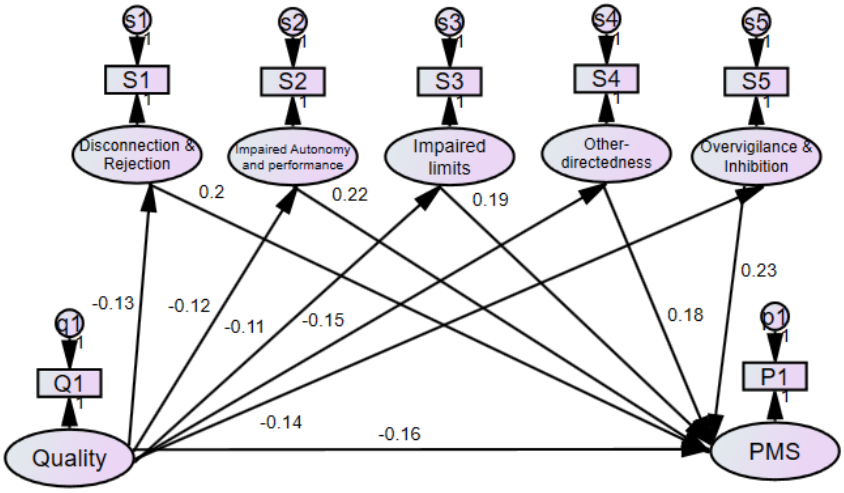
The summary of direct effects

Independent variable	Dependent variable	β (Standard coefficient)	t	sig
Health-related quality of life	PMS	-0.16	4.30	< 0.05
Disconnection and rejection	PMS	0.20	4.65	< 0.05
Impaired autonomy and performance	PMS	0.22	4.82	< 0.05
Impaired limits	PMS	0.19	4.60	< 0.05
Other-directedness	PMS	0.18	4.41	< 0.05
Overvigilance	PMS	0.23	4.92	< 0.05
Health-related quality of life	Disconnection and rejection	-0.13	3.91	< 0.05
Health-related quality of life	Impaired autonomy and performance	-0.12	3.80	< 0.05
Health-related quality of life	Impaired limits	-0.11	3.49	< 0.05
Health-related quality of life	Other-directedness	-0.15	4.22	< 0.05
Health-related quality of life	Overvigilance	-0.14	4.16	< 0.05

According to the Table 3, the quality of life related to health had a significant negative direct effect on premenstrual syndrome (p<0.05). Additionally, the quality of life related to health had a significant negative direct effect on the domains of early maladaptive schemas (p<0.05). Finally, early maladaptive schemas had a significant positive direct effect on premenstrual syndrome (p<0.05). The final model of the study, along with beta coefficients, is shown in the Figure 1.

Figure 1

Final model with beta values



4. Discussion and Conclusion

The present study aimed to model premenstrual syndrome (PMS) based on quality of life with the mediating role of early maladaptive schemas. The results showed that quality of life was significantly negatively associated with PMS, indicating that an increase in quality of life related to health led to a decrease in the level of PMS. In this regard, the results of previous studies (Montazeri et al., 2019; Zarei & Bazzazian, 2015) showed that most participating women complained of decreased energy during this period and its impact on their health-related quality of life. The energy level of women is significantly influenced by steroid sex hormones during the menstrual cycle. The levels of these hormones change during the menstrual cycle to regulate energy homeostasis, and because energy metabolism increases during the luteal phase, individuals feel weak and lethargic. To compensate for energy during the luteal phase of the menstrual cycle, it seems that the need for high-calorie foods increases. Therefore, the tendency to consume certain

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foods, especially carbohydrates, fats, and sweets, especially chocolates, is more common in the follicular phase, which is more pronounced in women with PMS. A hypothesis suggests that the main role of these events is played by the estrogen hormone, which, when reduced in the luteal phase, increases the need for more calories. Other researchers have also emphasized the above issue and the impact of this syndrome on various dimensions of health-related quality of life in various ways. In the study by Montazeri et al. (2018), PMS was closely related to quality of life of patients, such that 30% of women suffered from symptoms of this syndrome and generally had a disorder in their general health (Montazeri et al., 2019). Another study showed that PMS is associated with emotional, behavioral, and physical symptoms (Kustriyanti & Rahayu, 2020). This symptom pattern occurs at a specific time in the menstrual cycle and is resolved during a specific period between menstrual cycles. These symptoms may cause problems for women, including physical dysfunction and mental health problems, severe impairment in social and occupational areas, and a significant reduction in health-related quality of life. Therefore, health-related quality of life includes a person's potential abilities (functional status), access to resources and opportunities to use their abilities to pursue and engage in interests (objective quality of life), and a general sense of well-being (subjective quality of life).

The results showed that the quality of life had a direct negative effect on early maladaptive schemas. This means that as the quality of life associated with health increases, the level of premenstrual syndrome decreases. The results of the study are consistent with the findings of Saadi et al. (2017). These results showed that there is a significant negative relationship between the components of early maladaptive schemas and the quality of life at a 99% significance level (Saadati, Zhian Bagheri, & Mashhadi Farahani, 2017). The results suggest that there are mitigating factors or inhibitory variables that, as vulnerability factors, lead to a decrease or dissatisfaction with life and subsequently a decrease in the quality of life associated with health. Additionally, early maladaptive schemas had a direct effect on premenstrual syndrome. This means that as early maladaptive schemas increase, the level of premenstrual syndrome increases. Furthermore, the results of Afshari and Esmaili (2016) showed that the emotional deprivation schema has a high power in explaining premenstrual syndrome. Additionally, the compliance schema can also explain premenstrual syndrome (Afshari & Esmaeili, 2016). Furthermore, the results of Bilge and Balaban (2021) are consistent with these findings (Bilge & Balaban, 2021). It seems that individuals with maladaptive deprivation schemas suffer more from premenstrual syndrome due to their high pain experience, which can create a basis for disability, and they may not be able to use desirable strategies to cope with premenstrual syndrome. Individuals with maladaptive deprivation schemas are less likely to seek help to reduce their pain in premenstrual syndrome and believe that no one can help them.

5. Limitations and Suggestions

One of the limitations of this study is that the study population was limited to married students of Tehran's Azad universities, so the results of this study can be generalized to the entire population with caution. Since the quality of life and premenstrual syndrome questionnaires included questions about personal issues, obtaining the cooperation of individuals to answer these questionnaires was difficult. Due to the large number of questions, there was a possibility of an increase in errors in answering, and some of the respondents did not answer the questionnaires, which may affect the research results. Given the significant relationship between early maladaptive schemas as a psychological factor and the quality of life associated with the health of women, as well as the deep roots of early maladaptive schemas, holding life quality-based psychotherapy courses for women with premenstrual syndrome, which is considered the best criterion for mental health, through attention and dealing with negative emotions and symptoms, happiness, satisfaction, and mental health, will be pursued.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics principles

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

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