

The Effect of Premenstrual Syndrome on Quality of Life in Adolescent Girls

Ziba Taghizadeh, MSc¹
 Maryam Shirmohammadi, MSc¹
 Mohammad Arbabi, MD²
 Abbas Mehran, MSc³

1 Department of Midwifery, college of Nursing and Midwifery, Tehran University of Medical Science, Tehran, Iran

3 Psychiatry and Psychology research center, Tehran University of Medical Science, Tehran, Iran

4 Department of BioStatistic, college of Nursing and Midwifery, Tehran University of Medical Science, Tehran, Iran

Corresponding author:

Maryam Shirmohammadi, MSc, Department of Midwifery, college of Nursing and Midwifery, Tehran University of Medical Science. Tohid SQ, Eastern Nosrat Ave., Tehran, Iran.
 Tel: 09124780907
 Email:midwiferytoday@yahoo.com

Objective: Premenstrual Syndrome (PMS) is a common psychosomatic disorder and about 30%-50% of women in the childbearing age suffer from mild to moderate form of this disorder and 3%-8% suffer from its severe form. The symptoms of this disorder are related to the specific biological characteristics of women's reproductive age that can start from teen years. The symptoms' devastating effect on these crucial years of life can result in a sense of dissatisfaction and inadequacy. The purpose of this study was to determine the correlation between premenstrual syndrome (PMS) and quality of life (QOL) in adolescent girls.

Method: This research is a descriptive-analytic study. The participants were 360 adolescent girls (180 in each group), studying in the second year of high school in south of Tehran. The participants were selected in a multistage randomly-clustered design according to their schools. Respondents completed the demographic questionnaire, premenstrual syndrome symptom daily record scale, and the medical study short form-36 (SF-36).

Results: Compared with healthy adolescents, those with PMS had a lower score of SF-36 in all the scales ($P < 0.001$). Except for mental health and vitality, no significant difference was observed between other scales of quality of life according to SF-36 in various severities of PMS ($P > 0.05$). However, a statistically meaningful difference was observed in mental health and vitality of SF-36 in severe form of PMS in compare to mild and moderate PMS ($P = 0.002$).

Conclusion: Premenstrual syndrome is associated with substantial burden on QOL in adolescents. In addition, increasing severity in PMS symptoms results in decreased quality of mental health and vitality.

Key Words:

Adolescence, Menstruation, Quality of Life

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Premenstrual syndrome (PMS) is a cyclic recurrence of distressing somatic and affective symptoms in the luteal phase of menstrual cycle and in the few days (1-3 days) of the next follicular phase. The most important somatic symptoms are feeling overwhelmed, food craving, insomnia or hypersomnia, headache, pelvic pain and discomfort, breast tenderness, joint pain, bloating; and the most common and distressing affective symptoms are irritability, anxiety, depression, mood swing, hostility, poor concentration, confusion, social withdrawal and interpersonal conflicts (1-3). The significant appearance of these symptoms starts from the teen years and worsen through the process of aging (4,5). During the childbearing age, up to 40% of women have some form of PMS, but only 3-8% have severe psychological manifestations -Premenstrual Dysphoric Disorder (PMDD). Related studies in Iran show that about 60% of adolescent girls and women in

reproductive age suffer from PMS (6,7). Emerging of PMS symptoms during the teen years complicate the process of puberty and will affect their interpersonal relationships, social and educational performance in a negative way, resulting in poor self-esteem and a sense of dissatisfaction and inadequacy (8). In 1948 after World Health Organization defined health as "a state of complete physical, mental and social well-being not only the absence of disease", health studies changed their route from an absolute view about disease, disability, risky and threatening behaviors to a more positive and expanded area such as quality of life (QOL) (9-11). Studies show that women with PMS report reduced work productivity and more interference with normal daily tasks and greater number of workdays missed for health reasons (12). Studies conducted on depressive and anxiety disorders view PMS as a kind of disorder with noticeable psychological aspect that can negatively affect the

Premenstrual Syndrome and Quality of Life

quality of life, enjoyment and satisfaction (11). As there has been barely enough published study and national data about the effects of PMS on adolescents in Iran, we decided to conduct this study in order to promote reproductive and mental health of women and to project the need for adolescent health services in our community.

Materials and Method

Participants

A descriptive-analytic study was conducted in south of Tehran with the community sample of adolescent girls (aged 15-17 years) based on a two-group design in 2008. Participants were 360 adolescent girls (180 in each group) who studied in the second year of high school in south of Tehran. The participants were selected in a randomly-clustered design, according to their schools and were divided in to two groups: adolescents with PMS and healthy samples. The survey was divided into two main phases: first, determining the cases who suffer from PMS in the community sample; second, completing the short form SF-36 by the both groups of participants. The respondents completed four different questionnaires including sociodemographic questionnaire, DSM-IV PMDD/PMS criteria questionnaire, the daily record of severity of PMS problems scale and the medical study short form-36 (SF-36).

Measures

Sociodemographic questionnaire gathered information about the participants' age, field of education, parental educational level, parental occupational status, familial economic status, duration of PMS and family history of PMS.

DSM-IV PMDD/PMS criteria questionnaire consists of 11 symptoms that according to the DSM-IV, participants should have at least five symptoms of this questionnaire and at least one of these symptoms should have been from the 4 first symptoms (core symptom). The symptoms should be present a week before menses and remit a few days after the onset of menses. The subjects who were expected to have PMS /PMDD according to this questionnaire were assessed for at least two prospective menstrual cycles through completing the daily record of severity of PMS problems scale.

The daily record of the severity of PMS problems scale, a validated self report daily symptom chart widely used for the diagnosis of PMS, includes 18 items that describe both physical and emotional symptoms. Each item is rated on a scale of 0 "not at all" to 3 "extreme". These items represent the criteria of PMS that have been described in the forth edition of the Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association (DSM-IV)(13). In order to confirm the diagnosis of PMS, participants were asked to complete this form for two prospective menstrual cycles. Aimed to calculate the severity of each symptom, the highest score of each symptom

between the last week of the previous menstruation cycle and the 4th day of the next cycle were accounted as the most severity for that symptom. Then the total score of PMS was calculated as the sum of the symptom's score divided by the number of symptoms (mean), after that this score was converted to percent. Therefore, the score between 0% -33% represented mild form of PMS, 33% - 66% as moderate and more than 66% was accounted as a severe form of PMS. (14).

These two questionnaires have a world-wide standard and they have been validated in an Iranian study by Ahmadi which was conducted in 2004, aiming to investigate the effect of Hypericum Perforatum on Premenstrual Syndrome(15).

The medical outcome study short form-36 (SF-36) is a widely-used scale as a general indicator of health status. The SF-36 covers both physical and mental concepts by 36 questions and each one has four-sub groups of the questions. For the physical component the four sub groups are as follows: physical functioning, role limitation due to physical problems, bodily pain, general health perceptions; and for psychological component the four sub groups are: social function, general mental health, role limitation due to emotional problems and vitality. Each question is rated from 0 to 100 which the higher score representing the most favorable score and the highest level of health. Montazeri and his colleges have validated the Iranian version of this standard questionnaire in the Iranian Institute for Health Science (16).

All the questionnaires were self-reported and were completed by the participants with the aide and observation of a trained researcher from the midwifery faculty about psychological aspects of the questionnaires.

Procedure

After obtaining permission from Nursing and Midwifery faculty of Tehran University of Medical Sciences and Tehran Education Organization and obtaining written consent from the participants following an explanation about the purpose and process of the study, all the qualified students who met the inclusion criteria to enter the study (N=915) completed the DSM-IV PMDD/PMS criteria questionnaire, according to their retrospective experience of the symptoms. At this point, 705 students seemed qualified for the confirmed diagnosis of PMS. After three months and completing the daily record of the severity of PMS problems scale for two prospective menstrual cycles, 409 students completed their forms correctly. The diagnosis of PMS was confirmed in 312 of the participants according to DSM-IV criteria, and 97 didn't have the essential criteria for the confirmed diagnosis. At the end of this stage, 180 students from those suffering from PMS, and 180 healthy students from the remaining 6 schools, were randomly selected and set in each group through a randomly clustered

design (according their schools; n=5). The participants in each group completed SF-36. Subjects with irregular menstrual cycle, current major medical and psychological problems, those receiving hormonal therapy and experiencing a catastrophe shortly before or during the study were excluded from the research.

Statistical Analysis

Data were analyzed using the statistical package of the social science (SPSS) (version 11.5). The following testes were employed for analyzing the results: independent t test to compare the results between the two groups, Mann-Whitney- U test for continuous and ordinal variables, Kruskal-Wallis Test in order to compare the scales of QOL between different severities of PMS in adolescents with PMS, and χ^2 Test for categorical variables.

Results

Demographic assessments showed that the mean age of the participants in the PMS group was 16.22±0.63 and in the healthy group was 16.19±0.61. The onset of menstruation (menarche age) in the PMS and healthy groups was 12.88±1.00 and 13.02±1.02 years respectively. Most of the participants in the PMS and the healthy groups (71.11% and 67.22%) had moderate economical status according their own perception.

According to the results of the daily record of the severity of PMS problems scale, the severity of PMS in most of the participants (62.22%) was moderate (score=33%-66%), in 8.89% was mild (score<33%), and in 28.89% was sever (score>66%).

The mean of scores in all the components of SF-36 in the PMS group was significantly lower than the healthy group (Table 1). The results of the Kruskal-Wallis Test showed no statistically meaningful difference in the score of quality of life items except in the mental health and vitality according to various severities of PMS (Table 2).

Discussion

According to data, the score of QOL in all the dimensions are lower in adolescents with PMS compared to the healthy group. Therefore, it can be concluded that PMS has great burden on different dimensions of QOL. Our finding in this study confirmed the result of Yang's study conducted in 2008 which aimed to determine the effect of premenstrual dysphoric disorder on health related quality of life (HRQOL). Yang study documented that the greatest burden of PMS is on the mental and physical components (P<0.0001), role limitation due to emotional and physical problems, mental health, (P<0.0001), vitality (P<0.01) and bodily pain (P<0.001)(17).

Rizk and his colleges in a study in 2006 conducted on adolescent schoolgirls in United Arab Emirates, proved that premenstrual syndrome has had suggestive influence on the QOL of those girls (P<0.001)(18). In 2008 a study by Nisar and his colleges was conducted with the aim of finding the relationship between PMS and QOL in a sample of medical students. The study indicated that the quality of life score in the mental and physical component in this sample was lower than the healthy population (P<0.001) ; and the most affected scales had the following order: role limitation due to emotional problems, role limitation due to physical problems, general health, vitality, social function, bodily pain, mental health and physical performance (19). Comparing the results of this study with our own, our study showed some similarities: role limitation due to emotional problems, role limitation due to physical problems, social function, bodily pain, mental health, vitality, general health and physical performance. Significant burden of PMS on the mental component and its scales such as role limitation due to emotional problems (as the most affected), vitality and social function in the present study and other studies confirm the idea that despite the high prevalence of somatic symptoms in women with PMS, the most distressing and conflicting factors are related

Table 1. Comparison of the score of subscales of SF-36 in adolescents with and without PMS†

The scales of SF-36	with PMS		Without PMS		
	Mean	SD	Mean	SD	P value
General Health (GH)	60.79	19.57	73.16	17.46	<0.05
Bodily Pain (BP)	45.02	22.28	62.74	23.57	<0.05
Role Limitation due to Physical Problems (RP)	39.68	29.62	63.58	3.17	<0.05
Physical Functioning (PF)	71.87	21.88	80.91	19.77	<0.05
Mental Health (MH)	56.62	19.57	70.59	19.41	<0.05
Vitality (VT)	52.09	18.45	65.09	19.73	<0.05
Role Limitation due to Emotional Problems (RE)	33.20	35.11	59.08	37.59	<0.05
Social Functioning (SF)	57.25	22.23	76.24	20.94	<0.05

Table 2. Comparison of the score of subscales of SF-36 among adolescents with mild, moderate and severe PMS†

The scales of SF-36	Adolescents with mild PMS		Adolescents with moderate PMS		Adolescents with severe PMS		P value
	Mean	SD	Mean	SD	Mean	SD	
General Health (GH)	65.87	16.76	62.19	19.93	56.26	19.05	NS ^{††}
Bodily Pain (BP)	47.06	21.87	44.91	22.39	44.61	22.25	NS
Role limitation due to Physical problems (RP)	40.62	32.75	42.50	30.13	33.30	26.99	NS
Physical Functioning (PF)	73.43	22.48	72.15	21.25	70.48	23.36	NS
Mental Health (MH)	65.25	17.57	59.41	18.36	47.92	20.05	*
Vitality (VT)	55.00	12.90	55.31	18.57	44.25	17.51	*
Role limitation due to Emotional problems (RE)	24.99	25.82	34.90	36.93	32.04	33.64	NS
Social Functioning (SF)	61.59	18.90	58.80	22.10	52.56	23.07	NS

† Results are given as Mean Score ± Standard Deviation

†† Difference between groups is not statistically significant ($P > 0.05$)

* Quality of life in Mental Health and Vitality Scales, in Sever PMS is significantly lower than other severities ($P=0.002$)

to psychological aspects (2). The results of this study indicate that QOL in adolescents with PMS is obviously lower than healthy adolescents. Trying to find a relationship between the severity of PMS and QOL, we found out the more the severity of PMS, the less the QOL in mental health (assessing: nervousness, depression and sadness in a degree that nothing can make the person feel happy, peaceful and calm) and vitality (assessing: energy, feel of tiredness and wearing out). However, we could verify this relationship only in sever forms of PMS and not in its mild and moderate degrees. In contrast, we couldn't signify any statistically meaningful relationship between degree of PMS and QOL in other scales. The susceptibility of the subjective dimensions of QOL like perceived mental health or vitality could be the result of a relatively negative view and perception about premenstrual changes among adolescents which is the consequence of poor information gathering, resulting in adverse expectation of menstrual related changes. It seems that providing adolescents with more positive and accurate information about mense and menstrual changes, can affect their perception in a more optimistic way. According to these findings, further studies can incorporate QOL not only as an outcome measures but also as a part of the inclusion criteria for the selection of subjects. For example, one research strategy might target subjects with sever symptoms and substantial impairment in QOL in order to compare different medical and psychological treatment for patients with sever form of PMS. In addition, we can focus on treating PMS in adolescents by giving more attention to psychological methods like counseling or cognitive behavioral therapy. The process of puberty and maturation in adolescent girls is affected by the biological changes related to reproductive features. This process can be particularly challenging for adolescences with a chronic disorder because not only they should negotiate their way through this demanding phase of maturation, they must also deal with the additional burden of a chronic

illness. As the results of studies have shown the burden of chronic physical and psychological disorders on QOL (20); in this study, we aimed to document the effect of PMS with its chronic nature on different dimensions of QOL. As our study was implemented on a community sample with nearly poor socio-economic status, conducting the same study in a community that is representative of all socio-economic classes is recommended and as we considered the QOL in adolescents' sample, another study can evaluate the impact of PMS on QOL in a more expanded range of the reproductive age.

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