Original Research Article

The Impact of Pre-Menstrual Syndrome on the Quality of Life of Nursing Students: a cross-sectional study

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ABSTRACT

Background: Pre-menstrual Syndrome (PMS) is a cyclic recurrence of group of symptoms. Emergence of these symptoms can impact social and educational performance, resulting in poor self-esteem and sense of dissatisfaction and inadequacy. The current study assesses the impact of PMS on Quality of Life (QoL) among the nursing students.
Methodology: This was a cross-sectional study. 160 students of nursing, studying at Belagavi Institute of Medical Sciences, Belagavi aged between 18 and 25 years were considered for the study. Socio-demographic characteristics were studied. Premenstrual symptoms were assessed with PMSS and WHO-QOL BREF questionnaire was utilized to understand the QoL of the students.
Results: Around half of the participants in the study had experienced moderate levels of symptoms physiologically, psychologically and about 1/3 of the participants experienced severe symptoms in the behavioral aspects. A positive correlation was noted with age and PMS. It was observed in the study that, early onset of menarche had lesser chances of PMS and better the QoL and the same was noted with regularity of the cycles among the students. A significant negative correlation existed between PMS and QoL suggesting lesser the symptoms of PMS better the QoL.
Conclusion: It was understood from the study that females should have better health education and understand that regularity of the periods leads to lesser PMS and better the QoL. Thus, health education on coping behaviors must be conducted to improve their QoL.
Keywords: Adolescent female, PMS, QOL, nursing students.

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INTRODUCTION

Pre-menstrual syndrome (PMS) is defined by a variety of physical, behavioral, and emotional or psychological symptoms that occur during the luteal phase of the menstrual cycle and experienced around the time of menstrual flow. Pre-menstrual Syndrome (PMS) is a cyclic recurrence of group of symptoms. Emerging these symptoms during young age can complicate interpersonal relationships, social and educational performance in a negative way resulting in poor self-esteem and sense of dissatisfaction and inadequacy. Premenstrual Syndrome is a common psychosomatic disorder. Some of the physical symptoms are breast enlargement and sensitivity, edema, weight gain, headache, and fatigue. In addition, it causes anxiety, irritability, mood swings and changes in appetite [1]. 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 global prevalence of PMS varies from 75 to 85 %. The prevalence of PMS found in a study of college students to be 18.4 % [2]. Another study of medical students found that 37% of participants had premenstrual syndrome [3]. The symptoms' devastating effect on these crucial years of life can result in a sense of dissatisfaction and

inadequacy. Understanding health-related quality of life from the perspective of the affected students with PMS is essential to support them and to develop the appropriate interventions to improve their quality of life. Therefore, there is need to assess the effect of PMS on quality of life on nursing students so that effective measures can be taken to improve the quality of life of these vulnerable individuals.

METHODOLOGY

The current study is a descriptive cross-sectional study with objective to assess the effect of premenstrual syndrome among nursing female students on their quality of life. The study was conducted amongst the female nursing students studying in Belagavi Institute of Medical Sciences, Belagavi, Karnataka, India. Simple random sampling method was used, and data was collected for the period of 1 month. The sample size of 157 was calculated using Open Epi 2.3.1 software. The sample size was rounded off to 160 students. The students who were less than 25yrs and consenting for the study were included in the current study. Students unwilling for the study and students with pre-existing gynecological/psychiatric condition were excluded from the study. The students were given a detailed introduction regarding the study and informed consent was obtained.

Tools Of Assessment

A semi structured questionnaire was developed to collect socio demographic characteristics. To assess the premenstrual syndrome, A PMS Scale [The premenstrual syndrome scale] was used to collect the data [4]. The scale consists of 40 questions distributed on three domains, which are physiological symptoms (16 questions), psychological symptoms (12 questions) and behavioral symptoms (12 questions). Each item (question) of this scale will be rated from (1) which indicated no symptoms to (5) which indicated extreme symptoms. A 5-point Likert scale was used for rating the 40 items (questions) of this scale as follows, never was scored as "1", rarely as "2", sometimes as "3", much as "4" and too much as "5" points. Score from 40- < 72 was considered as No symptoms, 72- < 104 as - Mild symptoms: a score of 104 – < 136 was Moderate symptoms, 136 – < 168 was Severe and Very severe was 168 -200.

WHO Quality of Life (WHOQOL-BREF) [5] questionnaires were used to assess the quality of life of the participants. The WHOQOL-BREF is developed by the World Health Organization. WHOQOL-BREF is a self-administered questionnaire comprising 26 questions on the individual's perceptions of their health and well-being over the previous two months. Responses to questions are on a 1-5 Likert scale where 1 represents "disagree" or "not at all" and 5 represents "completely agree" or "extremely". A total score of less than 60% was poor QOL, 60 % – 75 % as Fair QOL and Good QOL had more than 75 % of the total score.

Statistical Analysis

The data that was collected was coded, organized, tabulated and statistically analyzed using SPSS (Statistical Package for Social Studies) version 20. For categorical variable the number and percentage were calculated. The Chi square test was used to assess the differences between subcategories. Pearson's correlation coefficient was used to determine the correlation between two variables. The level of significance was adopted at $p < 0.05$.

RESULTS

In the current study, socio-demographic characteristics were studied, and it was found that, majority of the age groups participated were in the 21-22 years age group (59.5%), followed by 20.6% in 23- 25 years age and 10.4% participants were 25 years age. Only 9.5% of participants were within 20 years age group. Modified BG Prasad Classification was utilized in the study for socio-economic status, and it was noted that 37.5% participants were in class III followed by 33.7% in class II and 16.3% in class I. However, 4.3% of participants were in class V and 8.2% in class IV. It was understood that majority of the participants were in the middle class and upper middle. Very few were in the lower class. History of usage of oral contraceptive

pills (OCP) was studied, and it was known that almost all (96.9%) participants did not use any OCPs. However, only 3.1% of participants used OCPs. Distribution of participants based on religion was done and it was found that, 84.3% participants were Hindus, followed by 8.7% Muslims and 1.4% Christians. Majority of the study participants, i.e. 95.6%, were unmarried and 4.4% were married. Mean length of the menstrual cycle was taken up to 27.4±6.1 days. values are depicted in table 1.

Table 1: Distribution of the studied nursing female students as per socio demographic characteristics

Socio-demographic Data	(N=160)	%
Age Distribution		
18-20 years	15	9.5%
21-22 years	95	59.5%
23-25 years	33	20.6%
Above 25 years	17	10.4%
Socio-Economic Status (Modified BG Prasad Classification		
Class 1	26	16.3%
Class 2	54	33.7%
Class 3	60	37.5%
History of Oral Contraceptive Pill Usage		
No	155	96.9%
Yes	5	3.1%
Religion		
Hindu	135	84.3%
Muslim	14	8.7%
Christian	2	1.4%
Others	9	5.6%
Marital Status		
Married	7	4.4%
Unmarried	153	95.6%
Living Alone or with Family		
Alone	116	72.5
With Family	44	27.5
History of Medical or Surgical Illness		
Yes	23	14.3
No	137	85.7
Mean Length of Menstrual Cycle	27.4 ± 6.1 days	

Table 2: Distribution of the studied nursing female students according to their menstrual history

Menstrual data	(N=160)	%
Age of menarche		
<12 years	26	16.2
12–15 years	123	76.8
>15 years	10	7
Regularity of the period		
Completely irregular	40	25.6
Nearly regular	81	50.2
Regular	34	21.3
Completely regular	5	2.9

In the current study, age at menarche was studied and it was observed that 76.8% of the participants attained menarche by 12-15 years age and 16.2% attained menarche within 12 years age. Half of the participants in the current study had nearly regular periods, whereas 25.6% and 21.3% of the participants had completely regular and regular periods respectively. Only 2.9% of participants had completely irregular periods as depicted in table 2.

Table 3: Distribution of the studied nursing female students according to their total level of physiological, psychological and behavioral PMS

Total levels of PMS	Physiological PMS		Psychological PMS		Behavioral PMS	
	No	%	No	%	No	%
No symptoms	0	0.0	0	0.0	3	1.8
Mild symptoms	25	15.6	26	16.4	35	21.8
Moderate symptoms	78	48.8	55	34.3	90	56.2
Severe symptoms	54	33.8	59	36.8	30	18.7
Very severe symptoms	3	1.8	20	12.5	2	1.5
Total	160	100	160	100	160	100

In the current study, level of PMS was studied with severity of symptoms. It was noted that, in physiological domain 15.6% participants experienced mild symptoms, 48.8% experienced moderate symptoms. However, only 1.8% of participants experienced very severe symptoms. In case of psychological PMS 16.4% participants experienced mild symptoms, 34.3% participants experienced moderate symptoms, and 36.8% participants experienced severe symptoms. In the behavioral PMS, half of the participants (56.2%) experienced moderate symptoms followed by 21.8% experienced mild and 18.7% experienced severe symptoms. Only 1.5% of participants experienced very severe symptoms as depicted in table 3.

Table 4: Correlation between socio-demographic characteristics and menstrual history and their PMS and QOL

Socio-demographic data	PMS		QOL	
	R	p	R	p
Age	0.229	<0.001**	0.048	0.496
Age of menarche	-0.025	0.612	-0.104	0.018*
Regularity of period	-0.205	<0.002**	0.117	0.012*

**Significant at p<0.05, **High Significant at p<0.001*

In the current study, sociodemographic data was studied with PMS and QoL to find out any correlation exists. It was noted that, with progressing age the chances of PMS were increasing and had significant positive correlation. However, there was no significant correlation between age and QoL. Age at attaining the menarche had negative correlation with PMS suggesting progressive age of menarche lead to decreased chances of PMS and improvement in the QoL. However, there was significant negative correlation between age at menarche and QoL. Similarly, regularity of period was studied, and it was noted that, with increasing chances of PMS there was lesser the regularity of the periods. However, with increasing regularity of the periods there was improvement in the QoL, and these were found to be statistically significant.

In the current study, a correlation was tried to find out between PMS and QoL. It was noted that, whether physiological, psychological or behavioral PMS with increasing severity in their symptoms, there was lesser QoL. i.e., the QoL was improving the lesser chances in the severity of PMS and they were found to be statistically significant.

Table 5: Correlation between nursing female students 'PMS and their QOL

Females PMS	Females QOL	
	R	p
Physiological symptoms	-0.154	0.002**
Psychological symptoms	-0.145	0.001**
Behavioral symptoms	-0.174	<0.001**
Total PMS	-0.184	<0.001**

** Highly significant at p<0.001

DISCUSSION

Socio-demographic characteristics

In the current study, age-wise distribution showed only 9.5% were within 20 years age group; 59.5% were in 21–22-year age group followed by 20.6% between 23- and 25-years age. Only 10.4% of patients were 25 years and above. A study done in Egypt [1] on the effect of premenstrual syndrome among adolescent nursing female students on their quality of life showed that among 446 participants; 61.9% re within 20 years age group and only 38.1% were of 20 years age and above. Another study done in Puducherry [6] showed that, among 300 participants studied, there were 97.3% in 18-20 years age group and only 2.7% in 21-25 years age group. A similar study done in Egypt [7] found that, among 120 study participants 10% were within 20 years age and 71% in 21-23 years age group.

Socio-economic status was studied in the current study, and it was noted that among 160 participants, 37.5% (60) of the participants were in class 3 followed by 33.7% (54) in class 2, 16.3% (26) in class 1; whereas 4.3% (7) of the participants were in class 5. A study done in Nepal [8] noted that, among 106 participants, there were 47 (44.3%) participants each in the middle- and low-income group and 12 (11.3%) were in high income group which were found to be like the current study findings. Another study done in Chennai, Tamil Nadu in 2019 [9] found that, among 200 participants, 30.55% were in Middle class, followed by 28.33% in upper middle and 26.66% in the upper class. None of the participants were in the lower class, which was observed to have similar findings to the current study.

It was noted in the current study that 96.9% of participants did not use any OCPs. However, 3.1% used OCPs. A similar finding was noted in a study done in Ranchi, India [10]; wherein, none of the 150 participants used any contraceptive pills. A study done in Saudi Arabia in 2018 [11] noted that among 246 participants none of them used birth control pills which was found to be very similar to the current findings.

A religion wise distribution of the study participants noted that, 84.3% were Hindus, followed by 8.7% Muslims and 1.4% Christians. A study done in Ranchi, India [10] found that, 47.3% of the participants were Hindus, followed by 42.7% Christians and 10% Muslims which were found to be near like the current study findings. However, Christians in this study were relatively higher than the current study findings. In most of the study participants, i.e. 95.6% were unmarried and 4.4% were married. Similar results were found in previous studies [10-11]. In the current study, majority of the participants (72.5%) were residing alone then 27.5% stayed with family. A study done in Ethiopia [12] noted that, 93.1% participants stayed in the dormitory whereas, 2.9% stayed in the private room and only 4% stayed with family which was observed to be like the current study findings.

On an average, the participants in the current study had 27.4±6.1 days as the length of menstrual cycle. A study done in Chennai, Tamil Nadu in 2019 [9] found that, 66.6% participants had 30 days length of menstrual cycle followed by 24.4% having between 31 and 35 days. On an average, length of menstrual cycle was noted as 27.88 days. A study done in 2013 [13] noted that, mean menstrual period duration was 5.2±1.02 days which showed the data on mean days of menstrual bleeding rather than whole length of the cycle.

Another study done [14] showed that, mean length of menstrual cycle was noted to be 31.48±12.00 days which were noted to be on the higher side than the current study findings.

Menstrual Data

In the current study, among 160 participants, the onset of menarche was within 12-15 years in majority i.e., 76.8% followed by 16.2% among the participants who attained menarche within 12 years age. Only 7% of participants lately are over 15 years of age. A study done Puducherry [6] found that, among 300 participants, 92.3% attained menarche in 12-15 years age group, followed by 6% participants attained menarche within 12 years. Only 1.7% of them attained menarche lately over 15 years age which were found to be like the current study findings. Another study done [15] found that, among 200 participants, 92.3% attained menarche between 12- and 15-years age, followed by 6% attained menarche within 12 years age and 1.7% over 15 years age. Thus, noticing the similar findings with the current study.

On the regularity of menstrual cycle, it was noted in the current study that, half of the study participants had nearly regular menstrual cycles followed by 25.6% had completely irregular cycles and 21.3% had regular cycles and 2.9% had completely regular cycles. A study done [1] found that, among 446 participants, half of the participants had nearly regular menstrual cycles followed by 25.6% had completely irregular cycles and 21.3% had regular cycles and 2.9% had completely regular cycles which was found to be very similar to the current study findings.

A study done in Nepal [8] noted that, among 106 participants, majority 76.6% participants had irregular menstrual cycles and 27.3% had normal regular menstrual cycles. A study in Tamil Nadu [9] found that, among 180 study participants, majority 71.66% had regular menstrual cycles and only 28.33% had irregular menstrual cycles which was found to be contrasting to the current study findings.

Level of PMS

It is noted from the current study that, 33.8% of the study participants experienced severity in the physiological PMS as well as 36.8% experienced the similar severity with psychological PMS. 1.8% of the participants experienced very severe symptoms in the physiological PMS, 1.5% in the behavioral PMS. However, psychological PMS had more impact on the very severe symptoms i.e., 12.5%. 56.2% of the behavioral PMS patients experienced moderate symptoms. A similar study done [1] found that, 50.2% participants in the behavioral PMS experienced moderate symptoms, followed by 25.1% had mild symptoms. Only 2.2% participants in the behavioral PMS experienced very severe symptoms. Participants having psychological PMS experiencing severe symptoms were 36.8% followed by 38.1% experiencing moderate symptoms. Similarly, among the participants having physiological PMS 48.4% experienced moderate symptoms and 35% experienced severe symptoms. These findings were found to be like the current study findings. Another study [16] found that 28.7% of participants in the CSPMS group had severe physical symptoms followed by 48% having moderate symptoms. However, 6.7% of participants in CSPMS free group experienced moderate symptoms. In the CSPMS group, 60.7% of participants experienced severe psychological symptoms followed by 31.3% of participants who had moderate psychological symptoms. 8.6% of the participants in the CSPMS group experienced severe behavioral symptoms suggesting the findings near like the current study.

Correlation between socio-demographic data and PMS with QoL

In the current study, socio-demographic characteristics was studied against PMS and also QoL. It was noted that, age had positive correlation with PMS suggesting that, with increasing age there is increase in the chance of PMS and it was found to be statistically significant. However, this had no significance with QoL. Attaining the menarche by the girls had an impact on QoL, suggesting that negative correlation between age at menarche and QoL. Regularity of the period was studied against PMS and QoL and it was observed that, more the regularity in the period lesser the PMS and better the QoL and it was statistically significant.

A similar study [1] noted from the study that, progressive age suggested increasing chance of PMS and QoL. However, significant change was noted with PMS rather than QoL. Attaining the menarche by the girls was

studied with PMS and QoL. It was observed that, both had negative correlation with age at attaining the menarche suggesting that increasing age at menarche lesser the chances of PMS. Regularity of the period was also studied against PMS and QoL which suggested that, more the regularity of the period lesser the chances of PMS and better the QoL and it was statistically significant. These findings were found to be like the current study findings. Another study [13] noted that, progressing the age there was increase in the chances of PMS and earlier the attaining the menarche lesser the chances of PMS. However, they were not found to be statistically significant. A study done [14] showed that, progression in the age at attaining the menarche of the participants, is the chances of PMS and more the regularity in the menstrual cycles of the participants, lesser the chances of PMS. However, they were not statistically significant.

Correlation between symptoms of PMS and QOL

It was noted from the current study that, there was significant negative correlation between participants having different types of symptoms in PMS and QoL. It was suggested that the physiological, psychological and behavioral symptoms much better is the QoL and they were found to be statistically significant. A similar study was done [1] and it was noted from the study that the less the physiological symptoms, psychological and behavioral symptoms much better is the QoL and they were found to be statistically significant. A study done [16] found that, fairer the QoL in the physical functioning more the PMS and lesser the PMS there was improvement in the physical functioning QoL. Similarly, it was with emotional functioning. Poor the social functioning in the QoL more the chances of PMS and it was statistically significant. Overall lesser the PMS better the QoL and it was statistically significant.

CONCLUSION

Based on the study findings it can be concluded that, majority of the participants in the physiological PMS experienced moderate symptoms. However, psychologically they experienced severe symptoms, and moderate symptoms were experienced in behavioral PMS. There was positive correlation associated with age and chances of PMS showing that progressive age led to increase in the chances of PMS. Earlier the age to attain menarche lesser the chances of PMS and better the QoL. More the regularity in the periods lesser the chances of PMS and better the QoL. It was understood from the study that, lesser the PMS symptoms better the QoL. Thus, there is need to give health education to overcome female students in regard to PMS and its levels along with its prevention. Further research is needed on evaluation of school-based health education on this topic.

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