

Predictors of premenstrual syndrome: outcome of a focus group discussion among late-adolescent girls in a selected nursing college in Kerala, India - A mixed method approach

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ABSTRACT:

Context: Premenstrual syndrome (PMS) is characterized by the cyclic occurrence of physical, psychological, and behavioral symptoms during the menstrual cycle. It is evident from the literature that PMS is a common problem all over the globe, as the majority (77.5%) of women surveyed believe it has a significant impact on their lives.

Aims: This study aimed to determine the incidence, intensity, and predictors of PMS among adolescent girls. **Settings and Design:** A private college of nursing in Kerala, India. A mixed method approach with descriptive design **Methods and Material:** The sample consisted of 100 students who fulfilled the selection criteria and were selected by random sampling, for assessing incidence and intensity (Quantitative). Of these, 10 students were selected for a focus group discussion (FGD) to determine the predictors of PMS (Qualitative). The incidence and intensity of PMS were assessed using Standardized Stainer and Wilkin's PMS diagnostic criteria tool and 10 volunteer students with criteria >10 (moderate and severe) were selected for FGD.

Statistical analysis used: Thematic and descriptive analysis **Results:** The results revealed that 86% of the participants were experiencing PMS. Twenty-four percent reported mild symptoms, while 54% and 8% reported moderate and severe PMS, respectively. Analysis revealed that both intrinsic and extrinsic factors influence PMS. **Conclusion:** PMS is an important health issue influenced by lifestyle factors among adolescent girls. PMS is on the uprise and there is an urgent need for motivating adolescent girls continuously through educational programs.

Keywords: Body Mass Index, Focus group discussion, and Premenstrual syndrome. **Key**

messages Menstruation is a normal biological phenomenon and all fertile females should accept with gratitude that they have the power of procreation. Relieving PMS symptoms begins with a change in attitude, which consists of women thinking differently about their cycles and modifying their lifestyles to lead more productive lives.

1. Introduction

PMS is a common problem all over the world, as the majority (77.5%) of women believe it has a significant impact on their lives.¹ More than 78.33 percentage of menstruating women reported their normal routines are disturbed by PMS.² The researcher realized that PMS is one of the major problems that contributes to the rate of absenteeism in colleges and negatively affects the academic performance of adolescent girls. Although many quantitative studies on the prevalence and predictors of PMS have been carried out, studies that adopt qualitative approaches are rare. This study was undertaken by the researcher with the objective of estimating the prevalence, severity, and predictors of PMS among adolescent girls, thus contributing, along with further studies, to making their life more productive, and to reducing absenteeism in classrooms and clinical settings.

11. Materials and Methods

Research design: A Mixed Methods research approach was employed. To determine the incidence and intensity of PMS, a quantitative, descriptive study design was used. A qualitative, exploratory study design was used to explore experiences related to a specific set of associated predictors of PMS through FGD. The study setting was a private college of nursing in Kerala, India 2021. In Phase I, 100 students belonging to a private nursing college in Kollam were recruited through random sampling using the lottery method. The inclusion criteria consisted of being females aged between 19 and 21 years that were willing to participate in the study.

Tools and techniques: Applied tool 1 Section A: Baseline Proforma and Section B: Standardized Stainer and Wilkin's PMS diagnostic criteria. The following are the classifications of PMS severity. A score of 1-10 indicates a mild severity, 11-20 moderate and 21-30 severe. In Phase II, ten nursing students with severe and moderate PMS intensity were selected through purposive sampling for the

purpose of conducting FGD. Tool II FGD guide, which included engagement, exploration and exit questions, was used to find the predictors of PMS. The exclusion criteria comprised females who were not willing to follow the FGD basic rules. Data collection process: IEC clearance was obtained from the Nitte (DU) Ethics Committee- Approved on 09/09/2020 (Approval no. xxx) and the institution where the study was conducted. The information obtained from this study, such as audio video recording, notes, and sociogram were kept strictly confidential, excluding any possibility of identifying the participants. The participants were given permission to withdraw from the study at any time. Permission was also taken to record the FGD. The fundamental data produced by this technique are the transcripts of the group discussions and the moderator's reflections and annotations.³

FGD Procedure: The session was initiated by the investigator in a well-ventilated room using the FGD guide, which consists of introducing the assistants, the purpose of FGD, the basic rules to be followed, and very clearly explaining the reimbursement or medical benefit of participating in the study.⁴

The physical setting: Seating arrangements were made so that the participants would be comfortable and the recorders would pick up their voices. The investigator and participants sat in a circle to make sure that all participants were given a chance to speak. The participants were each given a number and appointed a scribe with a postgraduate degree (Name...) and two other assistants (audio and video recorders with cell phone). The latter were trained to understand the study objectives, the methodology of each step used, and how it contributes to the understanding of the phenomenon in question. The discussion continued for 45-55 minutes, drawing from the complex personal experiences, beliefs, perceptions, and attitudes of the participants through a moderated interaction.⁵

The information obtained from this study, such as audio and video recording, notes and sociogram were kept strictly confidential, excluding any possibility of identifying any of the participants. Furthermore, a code number was assigned to each participant in order to ensure anonymity of the research data. A sociogram was used to graphically represent the quality of participant dynamics, and the degree to which the participants at the table were offered an opportunity to share their ideas. This helps to make visible the more vulnerable,

less-empowered groups. The sociogram, along with the transcription, thus helps to provide a more balanced analysis of the group process.⁶ Word processing software was used to create lines representing the directionality and the frequency of statements between participants. Weight was added to each line based on the number of directed comments by adding 0.5 points of weight per statement.⁷ The investigator spent time reading and rereading the script and interpreting the sociogram while listening to the audio and video recordings. To analyze the quantitative data, the investigator used descriptive analysis, and to analyze the qualitative data, they used the thematic analysis method.

III. Results

Phase I – Quantitative: A total of 100 nursing students were screened for PMS. Table 1 displays their sociodemographic characteristics. Table 1 shows some significant evidence connected with PMS: 90 (90%) participants consumed junk food, while only 14 (14%) exercised daily. Only 30 (30%) participants had received information regarding reduction of PMS. The prevalence of PMS among participants was 86%. Twenty-four participants (24%) had mild, 54 (54%) had moderate and 8 (8%) had severe PMS symptoms. 14 participants (14%) had no history of PMS

Table 1 Sociodemographic characteristics (N = 100)

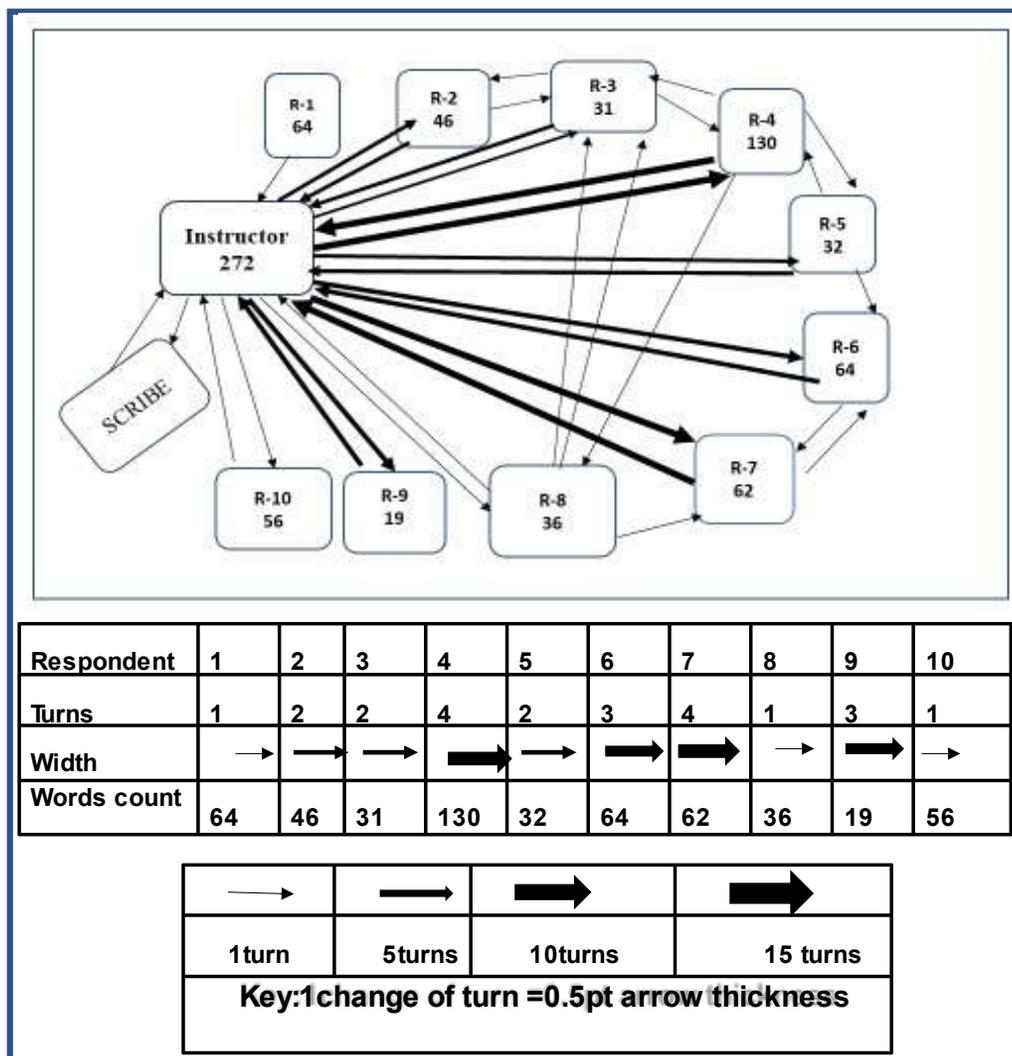
SI No	Sociodemographic characteristics	count	Percent
1	Age in years.		
	20	0	0.0
	21	100	100.0
2	Age in years at menarche		
	11-13	42	42.0
	14-16	58	58.0
3	BMI		
	Normal (18.5-25)	58	58.0
	Low (<18.5)	16	16.0
	25-30	20	20.0
	Very high (>30)	6	6.0
4	Family history of PMS		
	Yes	96	96.0
	No	4	4.0
5	Type of family		
	Nuclear family	96	96.0
	Joint family	4	4.0
6	Diet		
	Non vegetarian	94	94.0
	Any other	6	6.0
7	Use of junk foods		
	Yes	90	90.0
	No	10	10.0
8	Frequency of exercise		
	Daily	14	14.0
	Weekly	52	52.0
	Any other	34	34.0
9	Received information regarding reduction of PMS		
	Yes	30	30.0
	No	70	70.0
10	Medication at present		
	Yes	4	4.0
	No	96	96.0

Phase II – Qualitative - Predictors of PMS:

Drawing on the transcript, in vivo codes, conceptual codes, categories, and themes were formed. The in vivo codes were repeatedly checked with the original transcript and research team members independently reviewed the data. Arrows representing dialogue exchanges can then be plotted, editing the weight of each arrow drawn to align with the tally of turns (e.g., for every change

in turn, increase the arrow weight by 0.5 point). Therefore, if two people have no exchange, no arrow will be present, while thicker arrows will indicate more exchanges between individuals. Tabulating the number of words contributed by each focus group member will add a further dimension when presented alongside the diagram. Figure 1 shows the sociogram developed from the FGD.

Figure 1 shows Sociogram developed from FGD.



The figure shows that respondent one, nine and ten had no conversation at all with the peer group. Word count: Respondent: 1 (64); 2 (46); 3 (31); 4 (130); 5(32); 6(64); 7(62); 8(36); 9(19); 10(56); Instructor: 213.

Table 2 Summary of themes and sub-themes obtained from the Thematic analysis.

SI No	Themes	Subdomains	Frequency of codes FGD	Total number of codes (54)
Intrinsic factors				
1	Behavioural- Factors	Anxiety Perception Preoccupation	-1 -2 1	4
2	Biological factors	Lack of rest Obesity Hormonal factors	1 1 1	3
3	Emotional factors	Fear Worrying	4 1	5
Extrinsic Factors				
4	Academic stress	Stress Exam Education subject Requirement completion	6 3 1 3	13
5	Life style factors	Lack of exercise Lack of activity Life style Addicted to medication Fast food Fried items Physical activity Inadequate water Over eating Certain food	6 1 1 1 3 3 1 1 1 1	19
6	Hereditary	Family history	4	4
7	Climatic changes	Cold season Climatic changes Winter season	2 1 1	4
8	Socio cultural	Myth Fathers influence	1 1	2

In this study, the sociogram shows that only two respondents (four and seven) had four turns, while respondents six and nine had three turns, thus dominating the conversation. All others had two or less turns. Meanwhile, respondents one, nine and ten had no conversation at all with the peer group. Word count: Respondent: 1 (64); 2 (46); 3 (31); 4 (130); 5(32); 6(64); 7(62); 8(36); 9(19); 10(56); Instructor: 213.

Respondent four, who was very talkative, had a very large word count, using 130 words in four turns, whereas respondent seven, who also had four turns, used only 62 words, and respondent 9 only used 19 words throughout the discussion. It was

noticed that the moderator had to use 272 words, although she was expected to use only the minimum. This shows that the moderator had to motivate the students frequently throughout the discussion, and those participants were not motivated to pick upon each other's opinions and take the conversation further. The moderator also identified the isolated participants; respondent one and nine were isolated and responded only to the moderator. Thus, the sociogram provides a very direct explanation, through visual representation, of participant interactions.

Table 2 describes the summary of subthemes obtained from the thematic analysis. Similar sub-

themes and overlapping themes were grouped into themes and a master chart was prepared. The different perspectives of the participants are expressed under each coding category. The results have been presented as a text report. Eight themes emerged from this study following the qualitative data analysis

1. Family history (hereditary)

One of the respondents shared that her grandmother and own mother also experienced menstrual pain, and that they consoled her when she had problems:

Yes, it is true that we too experienced this same pain.” “My mother used to share with me when I get pain that she also had the same. [Respondent -4]

Thus, the participant concluded that it already exists in her family (hereditary).

2. Behavioural factors

One respondent argued that it is the perception of fear and anxiety that women associate with PMS, which is the sole cause of PMS, to which many agreed by nodding their heads. For example:

I think that is the perception of women that causes PMS (. -----) [Respondent -3]

What is that perception? Can you explain? OK? [Interviewer]

The perception of fear and anxiety that women have about PMS, or continuously thinking or worrying about PMS. [Respondent -3]

3. Biological factors

The presence of obesity and hormonal variations leads to PMS. There was a respondent with an irregular period due to hormonal imbalance, which led to obesity. For example;

I think lack of sleep increases PMS. [Respondent -4]

4. Emotional factors

Fear and worry due to exams, overwork, and doubts of completing the assignments on time, lack of time management, etc., are also causative factors.

Sister, in my opinion premenstrual syndrome occurs due to stress”. [Respondent -5] “Is it exam fear”. “Can you explain? [interviewer]

Sometimes exam fear, sometimes problems that occur in the family, or how to complete my assignments. That is in my case.. [Respondent -5]

5. Life style factors

More than three respondents discussed food intake patterns. The main points brought out by them were over-eating (fast-food, oily food, fried items) and lack of rest and sleep. One respondent shared from her personal experience that whenever she does not drink water her PMS increases and the group agreed with this fact. Another one responded about certain drugs which routinely uses for every period. Exercise and physical activity reduce PMS and many participants had something to share about this.

when I eat excessively oily, rich food ...Along with that, lack of exercise and physical activity, and stress, are contributing factors for me [Respondent -8]

6. Climatic factors

Two respondents shared that they have severe PMS during the cold season, and that when it is warm they feel better and have less symptoms, to which all participants agreed.

Sister for me during the cold climate [Respondent -9]

7. Socio cultural factors

Some respondents also agreed that it is a myth and that parents have a lot of influence in that respect.

One respondent shared that her father used to tell her:

Go and help your mother and she did that, often forgetting her pain. [Respondent -4]

So, the support of parents is an important factor.

8. Academic overloaded

Many respondents has something to share about this agreeing that academic overload worsens PMS. Some others also complained that they had exam stress, and fear of assignment completion.

I feel a lot of difficulty with PMS in certain time periods. That is stress, I fear not being able to complete the requirements on this and I stress about passing the exams. [Respondent -10]

IV. Discussion

To our knowledge, this is the first study of its kind to shed light on the many factors that contribute to PMS among females.

The quantitative findings emphasize the peak incidence and intensity of PMS among late adolescent girls who should be socially productive. The prevalence of PMS was found to be 86% and 24 samples (24%) had mild, 54 (54%) moderate and 8 (8%) had severe PMS symptoms. The above results are supported by a study conducted in Jordan (2017), which showed the prevalence of PMS to be 92.3%,⁸ and a descriptive study in Chhattisgarh India (2022), which revealed a 100% prevalence among 500 girls of which 65 had mild, 368 moderate, 57 severe and 10 PMMD symptoms.⁹

The qualitative part explains and brings to our attention the effects of lifestyle on PMS. Participants gave their opinions, based on their own experience, regarding predictors affecting PMS, such as **behavioural, biological, emotional, hereditary, academic, sociocultural, lifestyle, and climatic factors**, which originated from the FGD. The following is a discussion of various predictors of PMS and their effects on the female population and its productivity:

Behavioral, biologic, emotional factors: A study conducted on the prevalence of PMS in India (2019) found that stress is one of its main causes. A variety of methods have been proven to reduce stress and its symptoms associated with PMS.¹⁰ Another cross-sectional study conducted (2021) in Palestine showed that out of 398, 100% had physical symptoms, 397 (99.7%) had psychological symptoms and 339 (85.2%) had behavioral symptoms of PMS.¹¹ Again, a 2022 cross-sectional survey conducted on PMS across the life span using an international sample revealed that 64.18% reported mood swings or anxiety.¹² A 2018 study conducted in Turkey, revealed that the most common symptom experienced among students one week before menstruation was stress-uneasiness, with a rate of 80.6%.¹³

The present study found **Family history** of PMS to be one of the predictors of PMS. This factor is coherent with the findings of other studies. For instance, a study conducted in 2018 among students in Saudi Arabia, showed that a family history of dysmenorrhea is one of the predictors of PMS.¹⁴ Another descriptive, analytical study on PMS and PMDD and associated factors among female high school girls was conducted in 2019, in Shoushtar, Iran. The most common symptoms presented were mood, behavioral and physical symptoms. A positive family history was correlated with a higher frequency of PMS.¹⁵

The effects of PMS on **Academic performance** are an important drawback for females suffering from it. Various research studies on this have also proven academic overload to be a factor contributing to PMS. A cross-sectional study conducted in 2017 on adolescent health problems in Kerala showed that 14.7% of adolescent girls were not able to attend class and outdoor activities.¹⁶ Another prospective study on the prevalence of PMS and dysmenorrhea among medical students and its impact on their college absenteeism was carried out in Mangalore, South India in 2020. The results of the study showed that 45% of participants had dysmenorrhea and 68% had PMS. The study concludes that PMS

and dysmenorrhea are highly prevalent among female medical students and are significantly related to class absenteeism.¹⁷

Lifestyle factors, such as eating, rest, physical activity and sedentarism had the highest score codes in the present study. Also, we have enough evidence which proves that exercise reduces stress and PMS. Many FGD participants explained that sedentary lifestyles act as one of the critical causes of PMS. A 2021 cross sectional study conducted in Saudi Arabia reported that 80% of participants suffered from PMS, and recommended lifestyle interventions for reducing PMS which will help both weight-reducing and income-generating programmes.¹⁸ Again, a descriptive 2021 study in Palestine on binge eating symptoms (47.8%), associated these with the severity of PMS¹⁹ Another cross-sectional 2019 study conducted in Mumbai on PMS its association with sleep quality among nursing staff, showed the prevalence of PMS among participants to be 85.6% and the proportion of participants suffering from PMS to be 36.5%.²⁰ A 2016 study conducted in 2016 Hamadan, West of Iran, assessed the effects of relaxation, positive self-talk, and a combination of relaxation and positive self-talk on symptoms of PMS.²¹

A cross sectional study concluded that the risk of PMS was less among students who belong to a sports club (OR: 0.57; 95% CI, 0.35-0.91). The study concluded that dietary habits, sleep patterns, belonging to a sports club, and screen time affect PMS among high school students.²² A 2022 cross sectional study carried out in Brazil on the prevalence of PMS and associated factors concluded that almost half of university students had PMS, which interfered in various aspects of their lives, such as social and academic activities.²³ In addition, **sociocultural factors** like social activities and interpersonal relationships are also connected with PMS. In Bhopal, India, a 2018 study carried out among medical college female students concluded that PMS is a very common

problem among them, affecting both educational and social activities.²⁴

Quality of life is enhanced in all menstruating women who are struggling with PMS if they practice relaxation methods of any kind, which may lessen absenteeism, thus increasing educational scores and promoting a positive attitude and productivity.²⁵

Sedentary lifestyle is one of the series of factors that affect the health of people and, therefore, having a proper lifestyle is effective in reducing PMS.²⁶

The **strength** of the study was the participants, who were able to share their experiences while being aware of the terms and conditions. Its main **limitations** were having only one FGD, failing to conduct FGD among a different age group and among students of different disciplines in order to have variety of sharing and also to help one another.

Suggestions: For future research, the same study can be replicated in early adolescence, as well as among middle aged, married, unmarried women, and so on. As it was conducted on BSc nursing students who were a part of the health care team it would be better to conduct the study among other professional course students. Four codes were obtained from the FGD regarding climatic changes as a causative factor for PMS, and since no other studies have discussed these aspects, further research studies are recommended on these aspects.

V. Conclusion

This study confirms the value of description and exploration and relies on the translation of research findings into practice, also known as knowledge translation. The results of this study can be used to educate and to help the fertile female population become energetic and productive by motivating them. In sum, this study provides an overview of the incidence and severity of PMS. The most common predictors affecting PMS were found to be intrinsic and extrinsic factors which need to be corrected in order for females to lead a productive life.

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