

A Census of Premenstrual Syndrome in Young Adolescent Girls: Facts about Women Health in Developing Country

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Abstract

Introduction: Women often experienced ragged and unpredicted kind of behavior and hardly recognize their attitude as premenstrual syndrome. Adolescent girls are particularly naïve and unacquainted of the symptoms and if aware, hide due to shyness.

Method: In this cross sectional study, a survey was conducted in educational institutes to determine the prevalence of various categories of PMS in young teen agers girls at different stages of their luteal phase. Predominance of PMS was finding out by applying Chi square test and significant incidences of PMS was observed.

Result: PMS-A is recognized as a recurring phenomenon with most number of victims. Mild anxiety experienced by 38% respondents and severe mood swings affected more than 22% college going girls. PMS-H via PMS-A having maximum numbers of females with complain of spartan type of fluid retention. Abdominal bloating and breast tenderness found as customary signs and 70% pubescent girls face these troubles before and during menstruation. Depression crying and fatigue are other major warning cryptograms of PMS.

Conclusion: Frequency of premenstrual syndrome must be figure out in adolescent girls and they must educate about its indications, complications and outcomes to ensure the good quality of women health at their reproductive age.

Keywords: Premenstrual syndrome; Women health; PMS categories

Introduction

Young girls embraced many physical changes for attainment of adulthood. At luteal stage of their reproductive cycle, many indications accomplish the criteria of premenstrual syndrome but scarcely concede as premenstrual syndrome. Premenstrual syndrome (PMS) refers to physical and emotional symptoms that occur in the one to two weeks before a woman's period. It is a persistent luteal-phase condition characterized by physical, psychological, and behavioral changes of ample severity leading to deterioration of interpersonal relationships and normal routine activity. The definite cause of PMS is still unclear but some nutritional factors like amino acids, calcium, magnesium and vitamin B deficiency may be a possible reason of PMS development [1-3]. Involvement of ovarian hormones can also be not neglected as the fluctuations in these sex hormones before menstruation leads to mood swings and depression. The estrogen has excitatory effect on brain whereas progesterone activate inhibitory neurotransmitters and calm down the nervous system, therefore, fall of estrogen and raise in progesterone during luteal phase affect the brain excitatory and inhibitory system resulting in low mood and depression [4]. Many neurotransmitters such as serotonin and GABA are seemed to play roles in PMS. Serotonin, an excitatory neurotransmitter, is considered as a mood stabilizer and its concentration found to be decreased, whereas, increased production of inhibitory neurotransmitters such as GABA and endorphin may be noticed in women suffering from PMS.

The statistics about prevalence of premenstrual syndrome in Pakistani females is not known. Women usually brought up with the thinking that being a female, they should bear pain and other conditions associated with menstruation and must not complain about it. That's why most of the girls feeling insolent in revealing facts and reported PMS as normal. Moreover, self-medication is also a big hindrance in estimating the PMS, therefore no actual data is available about female suffering PMS in Pakistan. In an old study conducted in Karachi, the prevalence of PMS was 33% [5]. Till now no complete statistics is recorded for PMS in Pakistani women. Different demographic studies are available and it is mandatory to gather all the data for a comprehensive account of the disease in the country. This study is designed to collect data from educated adolescent girls attending various institutes to rationalize the figures about PMS. The study targets major female university as well as other co-education organizations of Faisalabad, Punjab, Pakistan to report maximum numbers of female students suffering from PMS in the city.

Menstrual disorders are quite common in teen agers and most of the women experience remarkable variations at the age of 10-16 years. The existence of at least 5 indicators out of 11 symptoms mentioned for this syndrome is essential [6]. These symptoms are stress, anxiety, change of mood (feeling sad and crying all of a sudden), depressed mood, persistent anger or personal clashes, reduce interest in social relationships and work, feeling of immersion or being out of controls, change in appetite (over eating or having little appetite), difficulty in sleeping (oversleeping or insomnia), lack of concentration, fatigue and lethargy, and physical symptoms (chest pain, abdominal pain, joint or

muscle pain, back pain, frequent urination, weight gain, acne, nausea, abdominal bloating, chest sensitivity and headache) [7,8]. There is no specific laboratory test or physical exam is established for the diagnosis of PMS, however in a practice bulletin published in 2000, ACOG describe that PMS can be diagnosed if at least one of the effective and one of the somatic symptoms must be reported 5 days before the onset of menstruation in the consecutive three reproductive cycles [9].

Material and Methods

A cross sectional study was planned to find out the prevalence of PMS and its effects on emotional and physical health. The target population includes teen agers from local population attending colleges and universities. A total 500 girls were agreed to participate in the study willingly and voluntarily but 50 girls hide the information due to limitations imposed by family representing the conservative rational in the society, hence record of 450 girls is available for discussion. It was clarified to them that the study was only for collecting the data about severity and prevalence of premenstrual syndrome. A comprehensive questionnaire designed by Dr. Ricki Polycove for PMS diagnosis was used to access the somatic and emotional variation during, before and after one week of menses. The questionnaire was subdivided into 5 categories. The PMS-A most common symptomatic category related to mental condition like anxiety, PMS-C related to feeding behavior such as craving, PMS-D and H linked with physical unease particularly depression and headache. Some other symptoms related to physical/facial appearance are also included in the questionnaire. These all categories are further segmented into mild, moderate and severe level to explore the severity of conditions. A liberal verbal explanation about the prospective and consequence of the survey was delivered to the participants and described information was recorded after obtaining informed consent. The descriptive statistical method was applied to calculate the frequency and percentage of different characteristics. Comparison between different variables at week before and after the periods was assessed through chi square test using Graph pad Prism (V6.0).

Results and Discussion

The volunteers of the study were 16-19 year old and mean age of 457 participants' is 16.5. The study reveals that 92% young female population is somehow effected by PMS and only 8% girls denied any condition related to syndrome. Among various PMS categories, PMS-A is more frequent in prevalence as majority of teen agers have complaint about various symptoms of PMS-A. Among these, 408 (89.27%) young girls feel more anxiety during or before menstruation

and have disturbed or restless routine life. Mild and moderate anxiety felt by 38% and 32% students, respectively, while 19% students presenting complaint of severe type of anxiety. Other than anxiety, large numbers of students (383, 83.8%) have complaints of mood swings. They feel their selves emotionally upset, ragged and often lose control on their nerves. According to them, sometimes, one week prior to menstruation, they became unpredictable and react in hostile manners. These mood swings found to be intense in 22% females though 28% females can handle this mood instability. Approximately, 33% students accept these attitude smacks and 16% participants totally denied any change in their temperaments. Similar trend was observed in nervous tension where reasonably less number of participants (17.5%) was effecting from extreme strains and 34.8% have manageable stress. Volunteers of the study also developed impatience before or onset of menstruation. Among them, 21% reported intense type of irritability whereas 30.4% and 28.7 % complained tolerable and minor irascibility respectively. A statistical significant increase was noticed in prevalence of PMS-A (P=0.0006) as very little number of girls indicated no signs of anxiety, depression, mood swings and nervous tension (10.72%, 20%, 16.2% and 19.25% respectively). In women with severe PMS, irritability and mood swings can become outbursts of anger and rage (Figure 1 and Table 1).

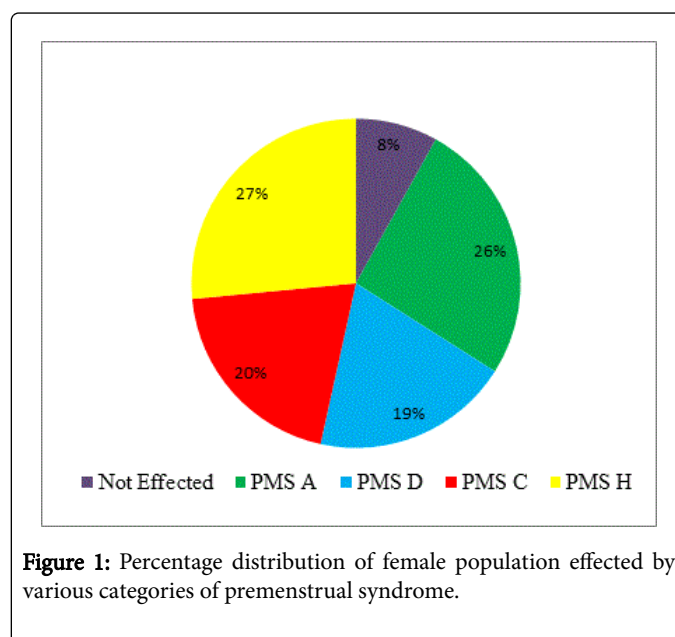


Figure 1: Percentage distribution of female population effected by various categories of premenstrual syndrome.

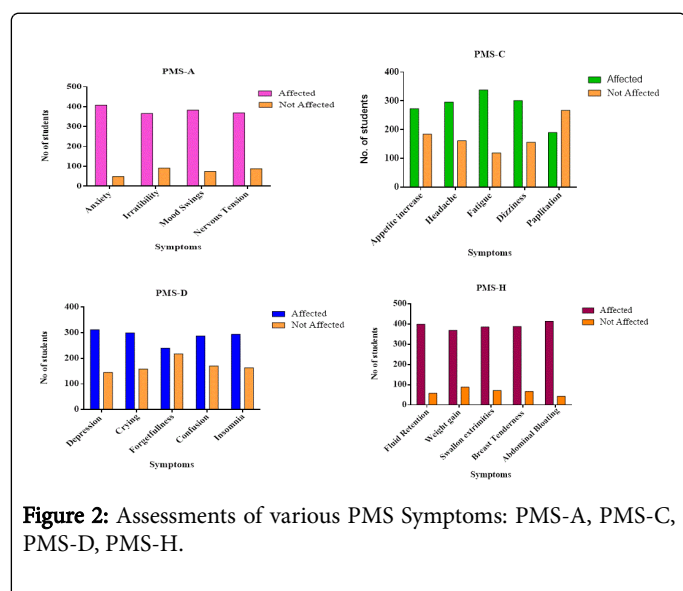
PMS category	Number of samples	Chi square	Degree of freedom	P-value	Statistical significance
PMS-A	457	17.47	3	0.0006	YES
PMS-C	457	112.5	4	<0.0001	YES
PMS-D	457	28.30	4	<0.0001	YES
PMS-H	457	19.81	4	0.0005	YES

Table 1: Contingency analysis of various PMS categories by Chi-square.

The major symptom of PMS-D is depression caused by decrease level of peripheral estrogen due to increase level of A-MAO [10]. Almost 68.3% students undergo depression during or before PMS and

among them 14% felt severe form of depression while 34.8% students suffered from mild depression. Crying is also a prominent signal of PMS and may be due to over secretion of prolactin. Significant higher

level of prolactin was found between 15-30 years of age therefore teenagers and pubertal girls during their luteal phase are more tearful with repeated episodes of crying [11]. So the results were according to situation and 32.9% girls of higher secondary education complained about moderate to severe emotional disturbance and approximate similar number of students admitted mild crying during menstruation. Forgetfulness is also another problem in women suffering from PMS. Again, estrogen is the main culprit behind the scene as it controls the thinking part of the brain and the women with lack of estrogen have lapses of memory losses, though, once estrogen level recovered after menstruation, forgetfulness vanished. However, young girls are not too much affected by this estrogen decrease because 47.48% of students did not have any complaint of amnesia. Only 28.22% suffered from slight absent-mindedness. In the luteal phase, majority of teenagers developed complaints of misperception (25.16%, 24.72% mild and moderate respectively) which reached to an extreme in 13% of students. Menstruation and pre-menstruation leads to disturbed sleep and 64.34% of teenagers encountered with insomnia during these days while the rest of girls have no change in sleep habit. PMS-D showed highly significant prevalence ($p < 0.0001$) when compared to non-affected young population (Figure 2).



dissatisfaction and develop desire of more eating, fatigue the muscles and sleeping problems. Complaints of headache, fatigue, dizziness and palpitations (64.76%, 73.95%, 65.85% and 58.42%) are also noticed by study participants and pervasiveness establishes highly significant value ($P < 0.0001$). Chemical ups and downs due to fluctuations of serotonin are thought to play a crucial role in triggering somatic PMS-C symptoms. Insufficient amounts of serotonin may contribute to premenstrual depression, as well as to fatigue, food cravings and sleep problems. Serotonin assists in attitude, behavior and happiness regulation and has properties that protect against PMS-C, so a reduction in serotonin level may elucidate the somatic changes associated with premenstrual craving syndrome.

In women with premenstrual syndrome, negative changes start soon after ovulation, gradually increasing as the corpus luteum develops, and reached a maximum during the last 5 days of the luteal phase. These symptoms decline rapidly once menstruation starts, disappearing within one or two days of ovarian steroids reaching baseline levels. Fluid retention is a significant symptom of PMS-H. Its mild, moderate and severe effect was felt by 27.13%, 34.13% and 26.03% of girls respectively, while 12.7% of girls have no complaint of fluid retention. Weight gain was observed in 80.73% of teenagers prior to menstruation (28.22% mild, 32.16% moderate and 20.35% has severe increase in weight) but 19.25% of girls reported no change in weight due to PMS. Similarly, mild breast tenderness is sensed in 84.9% of young girls, however 14.66% feel no tenderness. These symptoms may be associated with progesterone deficiency and estrogen dominance, most notably fluid retention, breast swelling, headaches, loss of libido, and poor sleep patterns. Adolescent girls are diet-conscious and eat very little, resulting in less mineral and vitamin intake which may be a cause of PMS. Deficiencies in calcium and vitamin B (thiamine, riboflavin) may be associated with PMS as a low level of extracellular calcium and vitamin B complex cause swelling in lower extremities. The percentage of swollen extremities is 84.24% (mild 29.98%, moderate 35.88%, severe 18.38% and not affected 15.75%). Abdominal bloating is another trouble in teenagers and majority of young ladies (90.6%) felt distended stomach and a large number (20%) suffered from an extremely inflated belly while very little number (9.4%) remains unaffected. Overall, the symptoms of PMS-H are statistically significant ($P = 0.0005$) (Table 2). Before and during the menstrual phase, females lurk upon spicy, fatty and caffeine-rich diet (tea, coffee and caffeinated beverages) and this altered feeding habit may be the cause of abdominal distension and fluid retention. Alcohol worsens PMS symptoms and may increase the risk for prolonged cramping (dysmenorrhea) during menstruation [13]. Again, the estrogen and progesterone is the main culprit behind the scene but a woman's response to her own cyclical hormones is extremely individual, and this is part of the reason that it has been so difficult to pin down the causes of PMS. Estrogen levels that cause anxiety and bloating in one woman will have virtually no effect on another [14,15]. A woman who sails through an ovulatory cycle with hardly a ripple is in complete contrast to the woman who is plagued by migraines or anger premenstrually when she doesn't ovulate [16,17].

Somatic symptoms appeared due to a decrease in estrogen level. These indicators include an increase in appetite, headache, fatigue, dizziness and palpitations. One week prior to menstrual flow, an intense desire of eating particular food was recognized by the participants [12]. In PMS-C, increased appetite affected 59.73% of girls, out of these, 33.48% and 18.81% of girls felt mild to moderate increase in appetite respectively, and 7.44% reported severe appetite while 40.27% felt no variation in appetite pattern. The reason for altered appetite habit may be attributed to chemical changes in the brain resulting in an inadequate level of serotonin and progesterone during the premenstrual phase which leads to body

PMS Categories	Symptoms	Mild (%)	Moderate (%)	Sever (%)	Not Effected (%)	P value
PMS-A	Anxiety	38.07	32.16	19.03	10.72	0.0006
	Irritability	28.66	30.4	21	20	
	Mood Swing	33.5	28	22.32	16.2	

	Nervous Tension	34.8	28.5	17.5	19.25	
PMS-C	Appetite increase	33.48	18.81	7.44	40.27	<0.0001
	Headache	28.88	22.97	12.91	35.22	
	Fatigue	24.94	25.16	23.85	26.03	
	Dizziness	26.48	22.53	16.84	34.13	
	Palpitation	31.94	13.78	12.7	41.58	
PMS-D	Depression	34.8	19.5	14	31.72	<0.0001
	crying	31.72	15.75	17.2	34.57	
	Forgetfulness	28.22	15.53	8.75	47.48	
	confusion	25.16	24.72	13	37.2	
	insomnia	28.66	20.78	14.9	35.66	
PMS-H	Fluid Retention	27.13	34.13	26.03	12.7	0.0005
	Weight gain	28.22	32.16	20.35	19.25	
	Swollen extremities	29.98	35.88	18.38	15.75	
	Breast Tenderness	33.26	30.63	21	14.66	
	Abdominal Bloating	36.1	34.57	19.91	9.41	

Table 2: Intensity percentages of PMS incidence.

Implications for Practice and/or Policy

Majority of young female population suffered from PMS but do not disclose due to social, religious and psychological pressure. It is time to educate our young generation about this disease because these physical, hormonal and psychological variations may cause severe reproductive health issues in future. Females must be able to recognize PMS and develop strategies to cope with it so that they avoid ragged and haphazard lifestyle. Behavioral abnormalities may also be prevented by timely management of the syndrome.

Conclusion

The survey is of preliminary type to govern the health status related to female reproductive cycle. The study is confined to one city of the country and figured out more than more than 92% young girls affected from PMS thus open the door for further assessment of women health of various ages. The study will encourage the health giving professionals and biostatisticians to pave more ways toward women health statistics.

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