Original Article

STUDY OF PREMENSTRUAL SYNDROME AMONG FUTURE HEALTHCARE PROFESSIONALS IN MASTERSKILL GLOBAL COLLEGE

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ABSTRACT

Objective: Premenstrual syndrome (PMS) is the name given to a collection of physical, psychological and behavioral symptoms that experienced by women during their late luteal phase of each menstrual cycle. This study was undertaken at Masterskill Global College to determine the prevalence of PMS, common premenstrual syndrome symptoms, and coping methods. It also highlights the impairment of life, social and emotional well beings.

Methods: This is a cross-sectional descriptive study using the retrospective method, analyzing the incidence of PMS based on (ACOG) criteria.

Results: The outcome of the study showed that 37% out of 300 samples diagnosed with PMS; 22% mild PMS. 9% moderate PMS and 5.3% severe PMS. 7% of the sample was diagnosed with Premenstrual Dysphoric Disorder (PMDD). The study finding suggested association of PMS severity with younger age group (P value<0.05), stressful lifestyles (P value<0.05), academic stress (P value<0.05) and sleeping problem (P value<0.05).

Conclusion: The study outcome showed PMS prevalence in Masterskill Global College and action shall be taken to provide as an educational guideline to increase their awareness and provide a better coping method to alleviate the symptoms of PMS.

Keywords: Premenstrual Dysphoric Disorder, ACOG Criteria, Late Luteal Phase, Premenstrual Symptoms.

INTRODUCTION

Premenstrual syndrome (PMS) is the name given to a collection of physical, psychological and behavioral symptoms that some women experience during the late luteal phase of each menstrual cycle (7-14 d prior to menstruation). Symptoms seem to worsen as menstruation approaches and subside at the onset or after several days of menstruation [1].

Premenstrual symptoms are a symptom that appear during the week prior to menstruation and resolve within one to two days after onset of menstruation. Millions of women are suffering from PMS during their reproductive age (approximately 40% of women will experience this syndrome in their life span) and severity of the signs among 5-10% is such that can impact daily routine. 3-5% of PMS sufferers are severely affected with what is called premenstrual dysphoric disorder (PMDD). In both PMS and PMDD, symptoms are relieved at or shortly after commencement of menstrual flow [2].

The American College of Obstetrics and Gynecology (ACOG) published the diagnosis criteria for PMS. It was considered if at least one of the 6 affective and one of the 4 somatic symptoms was reported five days prior to the onset of menses in the three prior menstrual cycles and ceased within four days of onset of menses [3]. 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 [4-6]. Research studies have reported up to 200 premenstrual symptoms of varying degrees of severity [7]. Main causes of PMS are still unknown and may be complex and multifactorial [8].

Due to inconsistencies which abound in defining PMS, estimation of the prevalence also varies widely [9]. Survey has been carried out and reported extensively in the western countries compared to Asia region where, only a handful amount of research studies has been conducted on PMS prevalence among women [1].

Table 1: PMS prevalence and the diagnostic/methodology in different selected studies mostly in Asia region

Study (Author and y)	Scale	Prevalence
Derman et al., 2004, Turkey[8]	Diagnostic and Statistical manual for Mental Disorder (DSM-IV)	61.40%
Yucel *et al.* (2009), Turkey[12]	Premenstrual syndrome scale (PMSS)	62.50%
Yucel et al., 2009, Iran[13]	DSM-IV	98.20%
Sadler *et al.*, 2010, UK[14]	MOOS menstrual Distress questionnaire	21%
Vichnin *et al.*, 2006, USA[6]	Retrospective symptom questionnaire (RSQ)	86%
Nourjah 2008, Iran[15]	DSM-IV	98.2% with 16.2% suffer PMDD
Delara *et al.*, 2012, Iran [16]	Questionnaire design based on ICD-10 criteria, PMDD characteristic based on DSM-IV, and quality of life assessment based on SF-36	Prevalence of PMS 100% with 37.2% suffer PMDD
Myint *et al.*, 2006, Thailand[1]	Self-administered questionnaire	41%-mild, 53% moderate and 6% severe
Tabassum *et al.* 2005, India[17]	MOOS Menstrual distress questionnaire	53%
Magdy Hasan Al Balah *et al.*, 2009, Saudi Arabia[18]	ACOG criteria	35.6% PMS prevalence with 45% mild, 32.6% moderate and 22.4% severe
Omar K *et al.*, 2009, Malaysia[19]	Shortened Premenstrual Short Form (SPAF)	75% at least with one PMS symptoms, 7% severe PMS
Wong and Khoo, 2010, Malaysia[20]	Self-administered semi-structured questionnaire	80.7% affective symptom and 83.6% somatic symptom
Lee *et al.*, 2006, Malaysia[21]	Self-administered structured questionnaire (in Bahasa Melayu)	74.1% prevalence of PMS reported

Almost all of the studies suggested that PMS are extremely common among women of reproductive age (15-49 y of age)[10] and studies has been made in various population including among adolescent girls, college and university student, and also in general population involving women in diverse cultural, educational and different lifestyle background[11]. The studies on the prevalence of PMS symptoms and syndromes have produced mixed results, being dependent on the diagnostic criteria and methodology.

In Masterskill Global College, Kota Kinabalu, Malaysia-a large portion of the student who attended the college are women and they are all in their reproductive age, thus make them all susceptible to be subjected to PMS. Hence, a study on PMS is an imperative to investigate the prevalence of PMS among the future healthcare professionals and in recognizing what common PMS symptoms among these students. The level of awareness among these future health care professionals also will be another variable that must be investigated. As PMS is a collection of somatic and physical symptom, various factors can be linked to the severity of PMS symptoms. Different methods of coping with PMS have been practiced around the world, and it can be either pharmacological or non-pharmacological method. The effectiveness of these methods will vary and is dependent on the particular individual. However, studies had shown that up to 3-5% of PMS sufferer may suffer the severe form of PMS, PMDD, and require medical intervention. Severe PMS symptoms will affect daily life routine and cause impairment in the quality of life. Furthermore, for a student, it will be an issue since it may impact in their academic performance and achievement.

MATERIALS AND METHODS

Study design and sample

This is a descriptive, cross-sectional study conducted at Masterskill Global College, Kota Kinabalu, Sabah, Malaysia. A total of 300 female students from first to final year are involved in this study and they were selected through simple random sampling technique from six different healthcare programmes such as Pharmacy, Nursing, Physiotherapy, Environmental Health, Medical Lab technologist and Healthcare programmes. Each student that involved in this study was given their written consents to participate voluntarily and explained the information provided by them will be confidential.

The students with any current medical condition and pregnancy were excluded from the study. Before answering the instruments, they were explained thoroughly about the study and questionnaires. Participants took approximately 10-15 min to finish self-reported questionnaire.

Instruments

The socio-demographic part consists of student background, lifestyles and dietary pattern including items pertaining of their awareness of PMS. The dietary pattern was subdivided into 8 items included fast food habit, junk food habit, fry food, caffeine consumption, alcohol intake, diet rich with meat, vegetables and fruits. This item was 5 points Likert-type scale and rated from never, rarely, sometimes, often and very often.

The second part of the instrument was adapted from the Pre-Menstrual Severity Screening Tool (PSST) [22]. This part was structured by adding criteria to accommodate the participant of this study besides to evaluate their awareness level of PMS symptoms. The symptoms were scaled by using 5 points likert scale which divided from no symptoms to severe symptoms. There are 43 symptoms listed and subdivided into 4 different part including somatic/physical symptoms (13 items), psychological symptoms (11 items), behavioral symptoms (12 items) and symptoms interference with daily life (7 items). The somatic/physical symptoms included breast tenderness, headaches, muscle joint pain, bloating, weight gain, low back pain, suprapubic pain, nausea, diarrhea, constipation, edema, fainting, and general body discomfort. The psychological symptoms included anger/irritability, anxiety/tension, and tearful / increased sensitivity to rejection, depressed mood/hopelessness, and depression/sadness, crying without any reason, nervousness-losing temper, loneliness, confused, low self-esteem and moodiness. The behavioral symptoms included fatigue, insomnia, hypersomnia,

sexual behavioral changes, concentration difficulties, polyphagia, decreased interest in work activities, decreased interest in home activities, decreased interest in social activities, feeling overwhelmed, absent from class and personality change. The symptoms interference included study efficiency, relationship with classmates and family, social life, home responsibilities, academic and assignment performance. Later on this part, there are 6 items were included to collect data pertaining of their coping method to alleviate the pain evoked by the premenstrual symptoms and family history of PMS. There was one item used as additional criteria for PMS diagnostic.

DSM-IV criteria used to diagnose participant with PMDD and it emphasis upon the first four of effective/psychological symptoms with one of it must be severe and other rated as moderate to severe; in addition with at least one somatic symptom rated as severe to moderate [23].

Procedure

The respondents involved were all given their consent to participate in this study. Liberal explanation about the questionnaires and different part in the instrument was given each time before they fill it. Two primary exclusion criteria for PMS diagnosed was used during the analysis part and only respondents that reported the symptoms during the luteal phase with regular monthly menses be included. These two criteria are important as it based on the ACOG criteria that explained only women with regular menses and the symptoms take place during the luteal phase are illegible for PMS diagnosing.

Respondents that meet both criteria above were then diagnosed based on ACOG PMS criteria. One scale 'I do not know' was also listed to know the level of awareness of these respondents of the premenstrual symptoms. The respondents that diagnosed with PMS were scaled based on the severity from mild to severe PMS and they also diagnosed either suffering from PMDD or not. ACOG criteria of PMS and DSM-IV criteria for PMDD were strictly followed for this study.

Analysis

Data gather from the respondents were checked for completeness, encoded, summarized and analyzed by using the Statistical Package of Social Science (SPSS) version 18. The respondents that diagnosed with PMS were analyzed of their family history, BMI, lifestyles, academic life, dietary patterns, as well as coping method that they used to alleviate the symptoms and the data were compared with respondents not diagnosed with PMS.

A regression analysis was performed for the PMS determinants such as BMI, locality of the stay, the age of menarche, smoking behavior, stressful life, academic stress and their dietary patterns.

RESULTS

The PMS analyses of the respondents were made based on the ACOG criteria. From 300 respondents, only 173 respondents (57.7%) were illegible for PMS analysis after utilized the exclusion criteria based on the menses regularity and the existence of the symptoms during the luteal phase; 7 to 14 d before the menstrual began [3]. Remaining 110 of them (36.7%) were diagnosed with PMS of different severity. 67 (23.3%) of the respondents has mild PMS, 27 with moderate PMS (9%) and 16 diagnosed with severe PMS (5.3%). 21 respondents were suffering from PMDD.

The PMS symptoms are divided into 4 main parts and the respondents affected by these, are tabulated in table no. 2. The most frequent symptoms among the PMS sufferer are anger/irritability (79), anxiety/tension (74), fatigue (59), headaches (57), general body discomfort (51) and moodiness (51).

The coping method used by the entire respondents to alleviate the premenstrual symptoms were analyzed and tabulated at table 3. The most common coping method utilized were sleeping (63%), resting (62.3%), listening to music (38.7%) and self-medication (34.3%). In the self-medication analysis, most of the respondents take painkillers to alleviate the pain caused by the premenstrual symptoms. 90 or 30%

of respondents were taking Paracetamol (Panadol menstrual), 9 (3%) took Mefenamic acid, 3 (1%) took Naproxen and Ibuprofen respectively. Aside of painkillers, respondents were also taking dietary supplements as a method to alleviate the premenstrual symptoms and the common supplements taken were evening primrose oil (EPO) and fish oil, both 6% respectively.

A significant association was associated between family history of PMS with present PMS sufferer compared with Non-PMS suffers and

the comparison was tabulated in table 4. The severity of PMS among the respondents was analyzed are represented in table 5. There are significant numbers of respondents that unaware either they have or not the premenstrual symptoms. From 300 respondents, 114 or 38% were unaware of the somatic/physical symptoms, 102 or 34% unaware of psychological premenstrual symptoms, 97 or 32.3% unaware of premenstrual behavioral symptoms and 65 or 21.7% were unaware either the premenstrual symptoms interfered with their daily life or not.

Table 2: The number of people affected by the PMS symptoms (n=110)

	Mild	Moderate	Severe	Total
Somatic symptoms	58	23	13	94
Psychological symptoms	56	24	16	96
Behavioural symptoms	56	22	11	89
Interference with daily life activity	37	20	16	73

Table 3: Coping method used by the respondents with PMS (n=110)

Coping Method	Mild PMS	Moderate PMS	Severe PMS	Total
Herbal remedies	8	4	3	15
Exercise	16	4	3	23
Resting	50	12	10	72
Hot pack	21	8	6	35
Seeks physician	4	0	1	5
Massage	14	8	4	26
Sleeping	44	16	14	74
Listening to music	28	9	4	41
Self-medication	21	13	10	44
Dietary supplements	2	0	2	4
Hot shower, crying etc	1	1	1	3

Table 4: Family history comparison

Family history	With PMS	Without PMS	Total
Mother	38	21	59
Sister	39	18	57
Anyone in the family	59	39	98

Table 5: PMS severity and socio-demographic determinants with significant test

	Mild PMS	Moderate PMS	Severe PMS	Chi square test	P value
Age of first menarche					
below 12 **y**	7	7	3	0.167	0.370
12-14 **y**	54	17	12		
above 14 **y**	6	3	1		
Age group					
18-21	38	19	12	0.034	0.006*
22-25	23	8	4		
25 & above	6	0	0		
BMI					
16.5-18.5 (underweight)	6	4	3	0.838	0.205
18.5-25.0 (normal)	56	22	12		
25.0-30.0 (overweight)	4	0	1		
>30 (obesity)	1	1	0		
Locality of stay					
Urban	39	16	11	0.580	0.129
Rural	28	11	5		
Lifestyle					
Sleeping problem	46	9	8	0.029	0.008*
Stressful lifestyle	23	16	13	0.005	0.001*
Academic stress	24	18	13	0.000	0.002*
Food Habit	52	20	10	0.282	0.171
Healthy food habit	15	7	6		
Unhealthy food habit					

DISCUSSION

Prevalence of PMS that demonstrates in this study (36.7%) is in accordance with the study made in Saudi Arabia and France which

reported PMS prevalence of 35.6% and 35% respectively[18,24]. Another study in China also reported lower incidence of PMS (30%) [25]. This study finding is lower, compare to study that has been made in Hulu Langat, Malaysia and Thailand that reported PMS

incidence 74.1% and 98% respectively. In contrast, the study made by Tabassum *et al.* reported a moderate incidence of PMS (53%)[17]. The differences of PMS occurrences between the reports may be due to the different premenstrual screening tools that used, target respondents, research method and diverse PMS diagnostic criteria. Through literature study, the dissimilarity among the region and diverse background of the population result substantially vary PMS incidence. Nevertheless, PMS prevalence in this study is consistent with reporting by Dickerson *et al.* that illustrated 25% to 95% of women suffer from PMS [34].

The criteria based on ACOG had presented frequency distribution of PMS severity as; 60% mild, 24.5% moderate and 14.5% severe from 110 respondents that diagnosed with PMS. The frequency of severe PMS is higher compared to study made in Thailand (6%) [1]. The reason for this higher incidence of severe PMS maybe due to the fact that as healthcare students, it increases their attentiveness toward what they feel upon themselves. In contradiction, not all the respondent share similar awareness level.

It is interesting that the most common symptoms among the respondents were psychological symptoms. Most of them reported anger/irritability (72%), anxiety (67%) and moodiness (46%) aside from fatigue (54%), and headaches (52%). The findings are astounding that psychological symptoms will be dominant among the respondents, and this is as how stated in a study by Mortola *et al.* that reported fatigue, irritability and anxiety among the most prevalent PMS symptoms [26]. In the case of this study, the higher frequency of psychological symptoms may be due to the fact that as a student, they are tenser to fill their academic obligation besides to balance it with daily and social life. Fatigue is possibly inflicted by the number of class need to attend per day and the duration of the class. On the other hand, the underlying reasons may be owing to the PMS itself; which etiological factors is still not absolute. Definitely, PMS among the respondent will inflict life impairment and in this study, PMS symptoms commonly interfered with the task to finish assignment was given (43%) and as a student's this was giving impact to their study efficiency.

Analysis of PMS incidence also revealed that 19% from the respondent with PMS were suffered from PMDD. The incidence of PMDD in this study was higher in comparison with the study made by Nisar *et al.,* which reported only 5.8% incidence of PMDD [27]. However, a higher incidence of PMDD was reported in the study by Delara *et al.,* (37.2%). Higher prevalence of PMDD in this study may be because the higher frequency of psychological symptoms among the respondents. PMDD criteria are more concerned with the affective symptoms which will result from the impairment in life [16].

The family history of PMS was higher among the respondents diagnosed with PMS compared to non PMS respondents. The reported of PMS greater in students who has a mother, sister or any female relative that had similar complaints. 53% of the respondent with PMS reported having a family history, at least, one female relative. This is in accordance with the study made by Demir *et al.* that demonstrated a significant association of PMS incidence among the respondent with a family history (24.6%) against those who have no family history (5%). The share physical and psychological factors between respondents with female relatives such as mother, sister and other may increase their perception and awareness of the symptoms [28].

In this study, the most frequently used coping method to alleviate the PMS symptoms are sleeping(63%) and resting (62.3%) follow by listening to music(38.7%) and hot pack utilizing (32%). The higher frequency of sleeping and resting may in association with higher frequency of fatigue among the PMS respondents. This is also due to the fact that they are a student and need not to go to work. Resting and listening to music can be therapy for reducing irritation and anxiety symptoms of PMS. Hot pack was utilized to relieve the bodily pain and certain ache caused by the PMS symptoms. The higher non-pharmacologic habit of coping method among the PMS respondents is in accordance with the study of Myint *et al.,* and Öztürk *et al.,* that reported sleeping as the most common coping method with 76% and 94.1% respectively[1, 29]. Nonetheless, the use of pharmacologic coping method (34.3%) also been practiced among

the respondents. However, they were accustoming with self-medication practice compare getting a consultation from the physicians or pharmacists. Although severe cases are reported higher in this study, only one respondent with severe PMS was seek physicians for treatment. Among the self-medicated respondents, the majority of them were taken Paracetamol/Panadol Menstrual (34%) to alleviate the pain induced by the PMS symptoms. The frequency reported being almost similar as reported by Myint *et al.,* (41.4%) [1].

In the survey, there are several socio-demographic factors that have an association with the severity of the PMS. It was demonstrated that respondent that comes from the younger age group (18-21) is more susceptible to suffer severe PMS compare with female from older age group. 12 (11%) out of 16 correspondents with severe PMS came from younger age group. The association of PMS and younger age group was also depicted in a previous study in Thailand [1] but it is contradicted by the finding in the study in Saudi Arabia [18] that showed PMS severity is associated with the older age group. This inconsistency of findings may be due to the different sample of the population that come from different background however such correlation to determine the relations of PMS and younger age group is still not fully understood.

The literature review displayed fact that most study conducted in Asia region show an association of PMS severity and the younger age group [8, 1, 30]. However some study unable to find such correlation of PMS with age [19, 27]. The discrepancy of the PMS association with age in the different study may have underlying reasons that shall be addressed in the future research. The finding of this study that showed a relationship between a younger age group and PMS severity may be owed to the fact that the numbers of student that attends this college is majority come from 18-21 age groups.

Respondents' lifestyles in this study also displayed a significant association with PMS severity. Respondents are diagnosed with PMS mostly have a sleeping problem (57%), undergo stressful lifestyles (47%) and academic stress (50%). These findings may have a correlation with the life as a healthcare student that will surely exert more stress due to the academic obligation and plentiful of assignments which had to be completed and submitted on time. For the sereasons, it increases the incidence of insomnia and stressful lifestyles. Stress association with PMS severity was depicted in a study by Lustyk *et al.,* that comparing women in two different groups (high and low PMS) [31]. The results revealed that women in high PMS had more stress significantly. This association is also supported by a study of Deuster *et al.,* that shows stress can exacerbate PMS symptoms and claim that PMS itself is a stress-related phenomenon [32]. However, the association of PMS and sleeping problem was never reported in the previous study. The relationship that depicted by sleeping problem and PMS severity may be owing to the fact that as a student; they are always needed to finish their assignment and study for the examination and test. Such matter will increase tense feeling and anxiety which can also result in stress. This condition will lead to a poor quality of life among people with PMS.

Another part of analysis reveals the awareness level of the respondents in this study about PMS and its relate symptoms. The analysis revealed that, about 40% of the respondent never heard of PMS and this number quite a significant fig. which later affected their knowledge about PMS symptoms. Without an understanding of PMS and its related symptoms, it will increase the misinterpreted of PMS with another related menstrual problem. This is also an evidence of how PMS was regarded as a 'daily part of life' and always be left untreated among the female in Asia region [33]. This also can explain of why the respondents mostly opt to sleeping and resting as the coping method to alleviate the symptoms of PMS. Furthermore, this is the main reasons of why the number of students who seek consultation with physicians was lower in this study. Although 60% of respondents were aware of PMS, mostly thanks to the education role, but they are still oblivion of PMS symptoms. It was evidently true as some parts of them were clueless or did not know of the presence of the symptoms. The facts that the students did not realize the somatic/physical symptoms are quite an appalling revelation as

the physical symptom is the most noticeable symptoms of PMS. As a future professional in the healthcare field, their awareness level for a condition such as PMS must be developed as later they will face various disorders with distinct sets of symptoms other than PMS. Moreover, they also will have the responsibility to disseminate health issues and problem toward the general public, and definitely PMS knowledge to their female counterpart.

CONCLUSION

The findings of this study confirmed the prevalence of PMS among the students in Masterskill Global College and it causes impairment in their quality of life, study efficiency, and social integration. The severity of PMS symptoms had led to absenteeism and also interfering with the assignment was given and their daily life in general. This show that the PMS adversely affects the life of people who suffered from it and this will require an intervention of effective coping method to reduce it consequences. The prevalence of PMS in Masterskill Global College illustrated a higher number of severe PMS/PMDD incidence. This is caused by the fact that psychological symptoms are the common PMS symptoms among the respondents. This is a significant revelation as it shows how irritability and anxiety is most common symptoms among the students. It was shown that it may be an expert by the stressful lifestyles and academic stress that the students have to face in order to cope with the study obligation and task. Furthermore, the association of PMS with the younger age group will increase PMS morbidity and there is an urgent need for a study to be conducted to confirm this finding so a better management of PMS can be outlined for a younger female.

Although PMS may seriously affect the women's life, it was illustrated in this study that the symptoms mostly left untreated, and they were not seeking medical help. This is may be due to the fact that PMS is such a delicate issue which forms attitudinal barriers among female in Asia and they are reluctant to seek help regardless of the severity of the symptom. This is confirmed to the significant frequency of unawareness among the students about PMS and its symptoms. As education is the principal source of PMS knowledge, education session concerning to PMS must be conducted to disseminate information about PMS, its symptoms and what is the best method to cope with it. PMS negatively affects the quality of life as suggested by the findings in this study that showed PMS sufferer has a low quality of life and it showed a significant burden of PMS especially upon the emotional health. As PMS caused lot of negative effects upon the educational, social integration and as well as emotional/mental health, means should be implemented to reduce the prevalence of this disorder.

Recommendations

PMS which may cause a detrimental effect on the life of its sufferer shall be coped with a more effective method that can reduce its adverse effect. Students must be educated about PMS, in its symptoms and in terms of managing with these symptoms. This is not only limited to this college students but also to the general public as it is important to increase awareness about PMS and the distress effect that can be inflicted by it. The impairment of life caused by PMS shall be addressed properly and student, as well as the public, must be guide on how to evaluate their symptoms and the means to cope with it. Routine monthly screening of PMS symptoms can be the best method of assessment and student can be guide of the right way to perform it. To reduce the effect upon study, students must be open to communicate their PMS issue with lecturers and request for assistance and consultation from medical personnel. College authorities shall address and recognize PMS issue among the female students and provide appropriate tangible and emotional support to aid them. Educational health programme must be conducted not only to elucidate on PMS but also another menstrual related morbidities that easily misapprehended as PMS symptoms such as amenorrhea, dysmenorrheal and others.

As stress suggests the most significant association with PMS severity, the preventive step must be utilized to promote a more positive and free of stress lifestyles. Adequate supports from family, friends, peers, college and health care personnel may decrease the stress and thus, reduce the severity of PMS. The indication of stress as one of the factors in PMS has been reported in various studies and due to this fact; future study shall focus on how to confirm the findings and explore the effective methods of managing stress related to PMS. Aside of that future studies shall also focus more on the awareness about PMS and its symptoms and the method to disseminate PMS knowledge to the general population. Future research in Asia region must also focus on how to encourage female in Asia to be more assertive and attentive about PMS and other menstrual related problem as it is a fact beyond reasonable doubt, PMS issue is mostly neglected and untreated among female in this region.

Limitations

There are several limitations of the study and this including a highly selective sample of healthcare student and this prevents generalization of the study findings. A small range of age group among the students also was not enough indication to show the relation of PMS with a younger age group. A study shall be conducted among the general population with a wider age group and a proportional number of samples from different age group to determine further the correlation of age and PMS. This cross-sectional study also cannot provide longitudinal relations between any of the study variables, outcomes and whether they are coincide or already occur. This study also relied with a single retrospective survey and such a study will not provide adequate and inherent data about PMS incidence. The best method will be the prospective method. Although the instruments used standard PMS scale, but yet there are bias occur during the filling of questionnaire due to recalling or differencing the symptoms. This is also due to the fact that they were not that willingly to reveal their existing premenstrual problem. The exclusion criteria added in the questionnaire also reduced the number of students can be diagnosed. Aside of that, as menstrual are regarded as a highly sensitive issue, it was unattainable for the researcher to ask directly of the participants of their menses; moreover, the survey was conducted in an open place.

CONFLICT OF INTERESTS

Declare none

REFERENCES

1. Myint Thu, Edessa Ore-Giron Diaz, Sawhsarkapaw. Premenstrual Syndrome among Female University Students in Thailand. AU J. T 9; 2006. p. 158-62.
2. Bendich A. The potential for dietary supplements to reduce premenstrual syndrome (PMS) symptoms. J Am Coll Nutr 2000;19:3-12.
3. American College of Obstetrics And Gynecology. Premenstrual Syndrome. ACOG practice bulletin; 2005. p. 15.
4. Sharma P, Malhotra CH, Saha T, Saha R. Problems related to menstruation among adolescent girl. Indian J Med Paediatr Oncol 2008;75:125-9.
5. Talor D. Premenstrual symptoms and syndromes guidelines for symptom management and self-care. Br J Obstet Gynaecol 2005;5:228-41.
6. Vichnin M, Freeman EW, Lin H, Hillman J, Bui S. Premenstrual syndrome (PMS) in adolescent: severity and impairment. J Paediatric Adolescent Gynaecol 2006;19:397-402.
7. Henderson C. ACOG issues guidelines on diagnosis and treatment of PMS. Women's Health Weekly; 2000. p. 20-22.
8. Derman O, NO Kanbur, TE Tokur, T Kutluk. Premenstrual syndrome and associated syndrome in adolescent girl. J Obstet Gynaecol 2004;15:201-6.
9. Kathleen A. Premenstrual syndrome: nutritional and alternative approaches. Alternative Med Rev 1997;2:12-25.
10. Batra P, Harper DM. Recognizing and treating the premenstrual symptom severity: impact on social functioning and treatment seeking behavior. J Clin Outcomes Manage 2002;9:87-98.

11. Halbreich U. The diagnosis of premenstrual syndromes and premenstrual dysphoric disorders-clinical procedures and research perspectives. Gynecol Endocrinol 2004;19:320-4.
12. U Yücel, A Bilge, N Oran, MA Ersoy, B Gençdoğan, Ö Özveren. Adolesanlarde Premenstruel sendrom yayginliği ve depresyon riski arasindaki ilişki. Anadolu Psikiyatri Derg 2009;10:55-61.
13. NM Bakhsani, MN Mousavi, G Khodabandeh. Prevalence and severity of premenstrual symptoms among Iranian female university students. J Pakistan Med Associatione 2009;59:205-8.
14. C Sadler, H Smith, J Hammond, R Bayly, S Borland, N Panay, *et al.* Lifestyle factors, hormonal contraception and premenstrual symptoms: the united kingdom southamptom women's survey. Int J Women's Health 2010;19:391-6.
15. Nourjah P. Premenstrual syndrome among teacher training university students in Iran. J Obstet Gynecol India 2008;58:49-52.
16. Mahin Delara, Fazlollah Ghpfranipour, Parviz Azadfalah, Sedigheh Sadat Tavafian, Anoushirvan kazemnejad, Ali Montazeri. Health-related quality of life among adolescent with premenstrual disorders: a cross-sectional study. Health Quality Life Outcomes 2012;10:1.
17. Samia Tabassum, Bilqis Afridi, Zahid Aman, Wajeeha Tabassum, Rizwana Durrani. Premenstrual syndrome: frequency and severity in young college girl. J Pak Med Assoc 2005;55:546-9.
18. Magdy Hassan Balaha, Mostafa Abd El Monem Amr, Mohammed Saleh Al Moghannum, Nouria Saab Al Muhaidab. The phenomenology of premenstrual syndrome in female medical students: a cross-sectional study. Pan Afr Med J 2010;5:4.
19. Omar K, Mohsin SS, Muthupalaniappen L, Idris IB, Amin RA, Shamsudin K. Premenstrual symptoms and remedies practiced by Malaysian women attending a rural primary care clinic. Afr J Primary Health Care Family Medicine 2009;1:18-22.
20. Wong LP, Khoo EM. Menstrual-related attitudes and symptoms among multi-racial asian adolescent females. Int J Behavioral Med 2010;18:246-53.
21. Lee LK, Chen PCY, Lee KK, Kaur J. Menstruation among adolescent girls in Malaysia: a cross-sectional school survey. Singapore Med J 2006;47:869-74.
22. M Steiner, M Mcdougall, E Brown. The premenstrual screening tool (PSST) for clinicians. Archives Women's Mental Health 2003;6:203-9.
23. American Psychiatric Association. Diagnosis and statistical manual of mental disorders. 4th edition. American Psychiatric Association; 1994. p. 715-8.
24. Serfaty D, Magneron AC. Premenstrual syndrome in france: epidemiology and therapeutic effectiveness of 1000 mg of micronized purified flavonoid fraction in 1473 gynecological patients. Fertilite Contraception Sexualit 1997;25:85-90.
25. Zhao G, Wang L, Qu C. Prevalence of premenstrual syndrome in reproductive women and its influential factors. Zhonghua Fuchanke Zazhi 1998;331:85-90.
26. Mortola JF, Girton L, Beck L, Yen SS. Diagnosis of premenstrual syndrome by a simple, prospective, and reliable instrument: the calendar of premenstrual experiences. J Obstet Gynecol 1990;76:302-7.
27. Nisar N, Zehra N, Haider G, munir AA, Sohoo Na. frequency, intensity and impact of premenstrual syndrome in medical students. J College Physicians Surgeons Pakistan 2008;18:481-4.
28. Demir B, Algül LY, Güvendağ Güven ES. Sağlık çalışanlarında premenstrüel sendrom insidansı ve etkileyen faktörlerin araştırılması. Türk Jinekoloji ve Obstetri Derneği Dergisi 2006;3:252-70.
29. Sibel Öztürk, Derya Tanrivedi, Behice Erci. Premenstrual syndrome and management behaviours in turkey. Australian J Adv Nursing 2007;28:54-60.
30. Lee AM, Wei R, Chung KF, Hui KT, Ip Sk, Leung HL, *et al.* Premenstrual symptoms among Chinese female undergraduates, relationship with stress and mental health. Hong Kong J Gynaecol Obstetrics Midwifery 2005;5:10-21.
31. Lustyk MK, Widman L, Paschane A, Ecker E. Stress, quality of life and physical activity in women with varying degree of premenstrual symptomatology. Women Health 2004;39:35-44.
32. Deuster PA, Adera T, South-Paul J. Biological, social and behavioral factors associated with premenstrual syndrome. Archives Family Med 1999;8:122-8.
33. Rodrig N. PMS misunderstood and untreated in Asia. Medical Tribune; 2008. p. 12.
34. LM Dickerson, PJ Mazych, MH Hunter. Premenstrual syndrome. Am Fam Physician 2003;67:1743-54.