PREVALENCE AND QUALITY OF LIFE (QOL) WITH PREMENSTRUAL SYNDROME (PMS) AMONG THE WORKING WOMEN IN REPRODUCTIVE AGE GROUP IN BANGKOK, THAILAND

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ABSTRACT:

Background: Premenstrual syndrome (PMS) is the condition with one or more various symptoms to affect a daily life, work life, and social relationships. The symptom of PMS performs and disappears after the menstruation. The frequency of premenstrual related symptoms is approximately 80-90%. About 5% are severe symptoms which interfere with personal and social relationships. In many cases, it requires medication treatment. Many studies in Thailand were conducted among the working women in reproductive age group. Almost all data were collected from the adolescents, medical students or nurses. Therefore, this study was aimed to investigate the prevalence, factors association, and quality of life (QOL) with PMS in a different population.

Methods: A cross-sectional study carried out in Bangkok from July to August 2016. Sample population was recruited from a skincare company. Data were collected by self-reported questionnaires. The descriptive statistics were evaluated by mean ± SD, percentage (n = %), odd ratio (OR), and 95% confidential interval (CI). Continuous and categorical data were analyzed by Student's t-test and chi-square (or Fisher's exact test) respectively. The association between factors and PMS were identified by logistic regressions.

Results: One hundred and fourteen participants were recruited with mean age 34.5 ± 7.75 years. Prevalence of moderate to severe PMS was 11.4% and mild PMS/no PMS was 88.6%. Only 3 factors were associated with PMS ($p<0.05$): younger age (mean 30.0 ± 8.0 y) more than older age (OR = 0.61, 95%CI = 0.40 – 0.94), single marital status; more than married/divorce/widow/separated (OR = 11.31, 95%CI = 1.42 – 90.24), and bachelor and master degree more than lower education level (OR = 5.27, 95%CI = 1.08 – 25.78). Four domains classification of QOL in the PMS group were "Physical Health" 12.40±1.80, "Psychological" 13.23±2.27, "Social Relationship" 15.59±2.80, and "Environment" 13.35±2.40. The QOL was not different between PMS and non- PMS ($p>0.05$).

Conclusion: The prevalence of PMS among the working women in these study populations was not quite high. This study revealed the younger age had more suffer from PMS. Early screening and diagnosis might help to manage and relieve the suffering from PMS. Education, awareness, and appropriate guideline for PMS management are highly recommended to improve the QOL among the working women in reproductive age group.

Keywords: Premenstrual syndrome, Women with reproductive age group, Quality of life

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INTRODUCTION

Since the first time that the definition of premenstrual syndrome (PMS) was designated in

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1931, PMS is a combination of physiological, behavioral and psychological symptoms which present in the late luteal phase of the menstrual cycle in reproductive age women and disappear within several days after the start of the menstruation flow and repeat in many cycles [1].

Menstrual cycle [2] is the natural reproductive cycle in women with childbearing age (15-49 years, WHO). It was separated by ovarian cycle and uterine cycle. The ovarian cycle is the change which occurs in the follicles of the ovary and the uterine cycle is the change in the endometrial lining of uterus. The luteal phase is the one phase in the ovarian cycle which related with the premenstrual syndrome presented.

PMS is the condition which one or more of the various symptoms to affect a daily life, work life, and social relationships [3]. The symptoms frequently described are mainly stomachache, dyspnea, anxiety, depression, crying attacks, irritability and extremities swelling which all of these symptoms are arise within the last 7 or 10 days of menstrual cycle [4].

Epidemiological surveys from the study in Switzerland among the women age 28 - 35 years which was conducted in 1986 – 1993 performed the frequency of premenstrual related symptoms approximately 80-90% [5, 6]. Only 5% are severe symptoms which interfere with personal and social relationships. In many cases required medication treatment [7]. PMS is a complicated condition which includes various mild-to-severe intensities of physical and psychological symptoms. Severe psychological symptom of PMS is known as Premenstrual Dysphoric Disorder (PMDD).

Although the incidence of PMS is widespread among menstruating women of all ages, the medication treatment needs are in the women over the 30 years age group [8] and usually report symptoms for several years. A few studies of PMS in Thailand were conducted among the working women in reproductive age group. Almost all existing data were collected from adolescent, medical students or nurses. Thus, this study was aimed at investigating the prevalence, factors, and QOL associated with PMS in the different population.

MATERIAL AND METHODS

Study design

The study design is cross-sectional study. Self-report questionnaires were used to investigate the prevalence and the factors involved in PMS as well as QOL among reproductive age group women who are office workers.

Study population and area

The study populations are the working women with reproductive age in Bangkok. The participants are the frontline officers in 17 centers of the one skin care company which located in Bangkok.

Sample size estimation

This study was aimed to determine prevalence of PMS. The estimated prevalence is 50% with 95% CI of 50% ± 10%. A sample of 96 women was required by the calculation formula below.

$$n = \frac{z^2 pq}{d^2}$$

To compensate for 10% incomplete data, samples of 110 women were recruited.

Sampling techniques

The sampling method is "Consecutive Sampling". Participants who meet the eligible criteria are selected. This technique seeks to include all accessible participants who agree to participate as part of the sample. This is the non-probability sampling technique. It selects the participants until the required sample size achieved [9, 10].

Inclusion criteria

One hundred and fourteen women with the reproductive age between 18-49 years were recruited from 17 centers of one Skincare Company in Bangkok during July 2016 to August 2016. Also currently have regular menstrual periods at least in the last two consecutive months and willing to participate in this study.

Exclusion criteria

Women with delivery, abortion, or lactation less than six months before this survey and women who is currently pregnant or using a hormonal contraception such as oral, injectable, implant, and hormonal intra-uterine device were excluded.

Data collection

Data collection process of this study was conducted at 17 centers of one Skincare Company in Bangkok, Thailand. A pre-screening log was created to pre-screen the accessible participants. The data collection tools are the self-reported questionnaires. The eligible participants were asked to complete and return the questionnaires to researcher directly within 1-2 week(s). To reduce the data loss and

missing, all questionnaires were rechecked by the researcher or research assistants after returning from each center on each following day, and then the data was entered into the database.

The pre-screening and data collection processes carried on at center by center of Skincare Company until the sample size achieved 110 participants.

Research instruments

Self-reported questionnaires including socio-demographic characteristics and factors associated with PMS, Premenstrual Symptom Tool (PSST), and WHOQOL-BREF were used as the instruments for data collection.

Socio-demographic and factors associated with PMS questionnaire are totally consisting of 17 questions; 7 items for demographic characteristics, 4 items for lifestyles and 6 items for medical and menstrual history.

PSST was used to identify the prevalence of PMS classified by severity into 3 categories as sever PMS or PMDD, Moderate-to-Severe PMS, and Mild/No PMS. Questionnaire is consisting of 14 symptoms checklist to evaluate severity and 5 items to evaluate the severity of the interference of the symptoms with the work efficiency or productivity, relationships, and social life or usual activities.

WHOQOL-BREF was used to identify QOL and the association with PMS. WHOQOL-BREF is a 26-item, self-administered, generic questionnaire that is a short version of the WHOQOL-100 scale. 24-items were classified in 4 areas called domains: physical health, psychological, social relationships, and environment. Two items asked about 1) an individual's overall perception of quality of life, and 2) an individual's overall perception of his/her health for overall rating of QOL" (OQOL).

Reliability and validity test for the questionnaire

Both English and Thai versions of the PSST were permitted to use from McMaster University, Canada. The content of Thai version is consistent with the version in the previous study from Chayachinda, et al. [11]. It was pre-tested in 30 reproductive age nurses. The Cronbach's Alpha coefficient for internal consistency was found more than 0.9 for all of domains [11].

WHOQOL-BREF, both English and Thai versions were permitted to use from World Health Organization (WHO). The content of Thai version is consistent with the version which was developed by Suwat [12] under the Department of Mental Health, Ministry of Public Health, Thailand. The Thai version of Suwat [12] was translated by language experts and evaluated for content validity by a psychiatrist, psychologists, and a pharmacist. The translated text was reconsidered, pretested, and rectified for 3 times. The Chronbach's Alpha coefficient of this version was found 0.8406 and validity was found 0.6515 by compared with Thai version of WHOQOL-100 which had been accepted by WHO [12].

Table 1 The prevalence of PMS

Prevalence	Frequency (n)	%
Moderate to severe PMS	13	11.4
Mild PMS / No PMS	101	88.6
Total	**114**	**100**

Data analysis

The data were analyzed in SPSS version 16.0 package program. The descriptive statistics were presented by mean ± SD, percentage (n = %), odds ratio (OR) and 95% confidential interval (CI). Student's t-test and chi-square (or Fisher's exact test) were used to analyze continuous and categorical data respectively. Multiple logistic regressions were used for the association between the dependent variables and independent variables. To determine the significant factors associated with PMS. All tests were two-sided, and had a significant level at a p-value < 0.05.

Ethical consideration

The confidentiality of participants in this study, the name and the personal information of participants were not mentioned and not available in this study. The ethical committee of Chulalongkorn University approved this study under certificate COA. No.125/2559.

RESULTS

A total of 114 working women in reproductive age group were recruited in the study. Mean age of this participant group was 34.48 ± 7.75 years. Prevalence of PMS is shown in Table 1.

From this study, only 3 factors were associated with PMS i.e. age, marital status, and education level. The younger age participants, mean 30.0 ± 8.0 years, had more risk to be a PMS compared with the older age (OR = 0.61, 95%CI = 0.40 – 0.94). While the single women had more risk to be the PMS than a married/divorce/widow/separated (OR = 11.31, 95%CI = 1.42 – 90.24). Participants who graduated

Table 2 Characteristics of 114 participants which associated with PMS

Characteristics	No PMS (n = 101)	PMS (n = 13)	*p*-value	Crude OR (95%CI)
Age (years)	35.1 ± 7.5	30.0 ± 8.0	0.025	0.61 (0.40, 0.94)
≤ 30	29 (76.3)	9 (23.7)	0.007	5.59 (1.59, 19.58)
> 30	72 (94.7)	4 (5.3)	-	1
Marital status				
- Single	52 (81.3)	12 (18.8)	0.022	11.31 (1.42, 90.24)
- Married/Divorce/Widow/Separated	49 (98.0)	1 (2.0)	-	1
Education level				
Primary & high school	48 (96.0)	2 (4.0)	-	1
Bachelor & master degree	41 (82.0)	9 (18.0)	0.040	5.27 (1.08, 25.78)
Others: (vocational)	12 (85.7)	2 (14.3)	0.187	4.00 (0.51, 31.37)
Employee status				
Manager	8 (80.0)	2 (20.0)	0.869	1.25 (0.09, 17.63)
Staff	88 (89.8)	10 (10.2)	0.622	0.57 (0.06, 5.36)
Others: (house keeper)	5 (83.3)	1 (16.7)	-	1
Income/month (Baht)				
≤ 10,000	33 (89.2)	4 (10.8)	-	1
> 10,000 – 30,000	46 (92.0)	4 (8.0)	0.655	0.72 (0.17, 3.08)
> 30,000 – 50,000	11(78.6)	3 (21.4)	0.334	2.25 (0.43, 11.66)
> 50,000	10 (83.3)	2 (16.7)	0.594	1.65 (0.26, 10.38
Individual living status				
With family	78 (89.7)	9 (10.3)	0.815	1.21 (0.24, 6.04)
With friend	2 (50.0)	2 (50.0)	0.059	10.50 (0.92, 120.26)
Alone	21 (91.3)	2 (8.7)	-	1
Regular exercise				
No	48 (85.7)	8 (14.3)	0.346	1.77 (0.54, 5.77)
Yes	53 (91.4)	5 (8.6)	-	1
Sleeping hours/night				
≤ 8 hours	84 (87.5)	12 (12.3)	0.049	2.43 (0.30, 19.94)
> 8 hours	17 (94.4)	1 (5.6)	-	1
Work hours/day				
≤ 8 hours	27 (90.0)	3 (10.0)	0.778	0.02 (0.21, 3.21)
> 8 hours	74 (88.1)	10 (11.9)	-	1
PMS history of mother-sister				
Yes	15 (78.9)	4 (21.1)	0.593	1.47 (0.36, 5.98)
No	33 (84.6)	6 (15.4)	-	1
Complaint of dysmenorrhea				
Never	16 (94.1)	1 (5.9)	-	1
Sometimes	63 (90.0)	7 (10.0)	0.603	1.78 (0.20, 15.51)
Always	22 (81.5)	5 (18.5)	0.259	3.64 (0.39, 34.21)
Menarche age (years)				
≤ 12	31 (88.6)	4 (11.4)	0.996	1.00 (0.29, 3.51)
> 12	70 (88.6)	9 (11.4)	-	1
Bleeding duration (days)				
< 3	13 (92.9)	1 (7.1)	-	1
3 - 5	70 (88.6)	9 (11.4)	0.639	1.67 (0.20, 14.34)
> 5	18 (85.7)	3 (14.3)	0.523	2.17 (0.20, 23.25)
Cycle interval (days)				
≤ 28	63 (87.5)	9 (12.5)	0.631	1.36 (0.39, 4,71)
> 28	38 (90.5)	4 (9.5)	-	1

with high education level; bachelor and master degree had more PMS than primary school, high school, and vocational (OR = 5.27, 95%CI = 1.08 – 25.78). On the other hand, there was no significant difference in factors such as employee status, income, Individual living status, religion, regular exercise, sleeping hours/night, working hours/day, PMS history of mother-sister, complaint of

Table 3 Quality of life score

Domain	N	Min	Max	Mean	SD
Physical health	114	8.57	16.57	12.68	1.52
Psychological	114	8.00	18.67	13.79	2.06
Social relationships	114	8.00	20.00	14.81	2.59
Environment	114	8.50	20.00	13.43	2.17
Q1: Individual's overall perception of QOL	114	1.00	5.00	3.40	0.73
Q2: Individual's overall perception of health	114	2.00	5.00	3.36	0.85

Table 4 Quality of life score associated with PMS

Characteristics	No PMS (n = 101)	PMS (n = 13)	*p*-value
Physical health	12.71 ± 1.48	12.40 ± 1.80	0.480
Psychological	13.86 ± 2.03	13.23 ± 2.27	0.300
Social relationship	14.71 ± 2.56	15.59 ± 2.80	0.249
Environment	13.44 ± 2.15	13.35 ± 2.40	0.890
Total	54.72 ± 6.80	54.56 ± 8.36	0.440

dysmenorrhea, and menstrual features (menarche age, bleeding duration, and cycle interval) ($p > 0.05$) in Table 2.

The association between QOL and PMS is illustrated in Table 3. Mean score of each domain of QOL demonstrated as follows; "Physical Health" was 12.68 ± 1.52, "Psychological" was 13.79 ± 2.06, "Social Relationships" was 14.81 ± 2.59, and "Environment" was 13.43 ± 2.17. Individual's overall perception of QOL and health were not included in 4 domains classification but defined as Q1 and Q2 respectively. Mean score of Q1 was 3.40±0.73 and Q2 was 3.36±0.85.

In PMS group, "Physical Health" was found 12.40 ± 1.80, "Psychological" was found 13.23 ± 2.27, "Social Relationship" was found 15.59 ± 2.80, and "Environment" was found 13.35 ± 2.40. The difference of QOL is not statistically significant between PMS and non-PMS ($p > 0.05$) (Table 4).

DISCUSSION

This study revealed that the prevalence of PMS which referred to moderate to severe PMS was 11.4% and no PMS/mild PMS was 88.6%. The study findings were similar to a study in USA, Steiner, et al. [13] in women with the age from 18 to 55 years who completed PSST. The moderate to severe PMS was 20.7%, no PMS/mild PMS was 65%, and PMDD was 5.1%. But for our study, the prevalence of PMDD was not found. To compare with an European, study in Spain, Duenas, et al. [14] found that moderate to severe PMS was 8.9%, no PMS/mild PMS was 91%, and PMDD was 1.1%. In Asian population, a study in Japan, Takeda, et al. [6] found moderate to severe of PMS 5.3%, PMDD 1.2%, and NO/Mild PMS 95%. The prevalence of PMS from this study was not different when compared with the data from the other countries such as USA, Spain, and Japan. Regarding the factors associated with PMS, shown in the Table 3, younger age had more risk to be PMS than the older age. Mean age of PMS group was 30.0±8.0 years, whereas the mean age of No/Mild PMS group was 35.1±7.5 years. To compare with the study from Taghizadeh, et al. [15] which was conducted in Iran adolescent girls, age 15-17 years, severe PMS was 28.89, moderate PMS was 62.22%, and mild PMS was 8.89%. Whereas, the study from Cheng, et al. [16] reported that 39.85% of new female university students in Taiwan including undergraduate and postgraduate having PMS with mean age 21.58 ± 4.00 years. The study from Chayachinda, et al. [11] in Thai nurse aged 18-49 years found the prevalence of PMS 25.1%. This number included the appearance of PMDD 5.7%.

Marital status in this study has showed that a single has more risk of PMS than a married/divorce/widow/separated group. To compare with the study from Amjad, et al. [17], which was conducted in Pakistan, PMS was more prevalence among unmarried women when compare with the married women (60% vs. 39%).

Higher education had more risk of PMS than lower education. The study from Amjad, et al. [17], performed that PMS were common among educated women than the women who were no education. Whereas, the study from US, Cohen, et al. [18] otherwise, surveyed only in PMDD among women

36-44 years. It demonstrated that PMDD was associated with lower education (odds ratio [OR] = 2.3, confidence interval [CI] = 1.1-4.9). PMDD is defined as the severe psychological symptom of PMS. A few studies would mention about the association between the education level and PMS.

A few studies suggested that exercise could be used to relieve the symptoms of PMS. One is from Salamat, et al. [19] suggested that after exercise, endorphins hormone are released. Then PMS symptoms are relieved. The complaints of PMS are lower among women who are regularly engaging in sporting activities. This study also introduced that exercise has been shown to be beneficial for mood symptoms, fluid retention and breast tenderness when monitored prospectively for 6 months to the sedentary women.

For the sleeping hours/night, a few study showed sleeping disturbance in PMS. Cheng, et al. [16] demonstrated that PMS was associated with poorer quality of sleep. Although sleep disturbance is listed as one of the criteria for PMS diagnosis in the PSST, there is little research on the nature and severity of this sleep disturbance in PMS. Mauri, et al. [20] found that women with PMS demonstrated poorer sleep quality in the luteal phase than in the follicle phase. In the contrast, Parry, et al. [21] found that there is no difference between the late luteal phase and the follicle phase in terms of the duration of sleep or time spent awake.

Pinar, et al. [22] found that participants whose dysmenorrhea occurred every cycle had more PMS than participants who had dysmenorrhea sometime or never, significantly ($p<0.05$).

The association between QOL **and PMS:**

In this study, the QOL of all 4 domains (Physical Health, Psychological, Social Relationships, and Environment) among women with reproductive age is not difference between the PMS and non-PMS group ($p>0.05$). While the study from Pinar, et al. [22] which surveyed 18-28 years old in-college students, reported that PMS score average of Physical Health and Environmental domains were significantly higher ($p<0.000$). It was showing that the physical health and environmental areas from the lower dimensions decrease along with the overall QOL as PMS score average increases. The study from Lustyk, et al. [23] in women aged 18-33 years, found that QOL is significantly lower in women who experience high PMS complaints compared to women who experience them slightly. Whereas, Demir, et al. [24] found that there is no significant difference between the frequency of PMS and lower dimensions of the QOL ($p>0.05$).

LIMITATION

The characteristics of the participants in this study are not diverse. Because the recruitment was restricted in only one private company; skincare clinic, thus the pattern of work life or life style of each participant were quite similar. The data analysis from this sample cannot be a representative of all working Thai women in the reproductive age group. The questionnaire completion was self-report; the answers are subjective data. The researcher did not review medical records of each participant.to validate the self-reported medical history. The consecutive sampling method was used to recruit the participants, it may have introduced biases.

CONCLUSION

The prevalence of PMS among the working women in reproductive age group is not quite high in this population as the same as the population in the other countries such as USA, Spain, Japan and also Thailand (compared with the previous studies). Age, marital status, and education level were the factors associated with PMS significantly ($p < 0.05$). Whereas in other studies, there are more factors associated with PMS such as the regular exercise, sleeping hours/night, complaint of dysmenorrhea, etc. Early screening and diagnosis might help to manage and relieve the suffering from PMS. Education, awareness, and appropriate guideline for PMS management are highly recommended to improve the QOL among the working women in reproductive age group.

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