

# Menstrual-Related Attitudes and Symptoms Among Multi-racial Asian Adolescent Females

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## Abstract

**Background** Menstruation has important implications on the physical and emotional well-being of adolescents' reproductive health.

**Purpose** This study aimed to investigate the perception towards menstruation and premenstrual syndrome (PMS), to provide insight into menstrual-related education information in order to help adolescent girls manage the physical and psychological changes associated with menstruation.

**Methods** This cross-sectional study included 1,092 adolescent females from 94 schools in the Federal Territory of Kuala Lumpur, Malaysia. A self-administered semi-structured questionnaire was used in the data collection.

**Results** The results showed the mean scores on the menstrual attitude questionnaire to be 2.80 (SD  $\pm$ 1.88) out of six. A total of 80.7% and 83.6% of the participants experienced one or more affective and somatic symptoms respectively in the premenstrual phase. Irritability, mood swing and tension were the three most frequently reported affective symptoms, while fatigue and menstrual cramps were highly prevalent somatic symptoms in both the premenstrual and menstrual phases. The effects on functional impairment and quality of life, in order of importance, include poor class concentration, restriction of social and recreational activities, difficulty to mingle with friends, and poor class performance. Despite the evident impact,

only 10.3% of adolescent girls consulted doctors for PMS symptoms, while one-third did nothing about their condition. There were ethnic differences in the seeking of treatment for PMS.

**Conclusion** The study calls for an education program related to PMS and menstrual-related disorders to provide information and support to adolescents. This will help them to cope better with menstrual-related problems, and encourage positive attitudes to menstruation.

**Keywords** Menstruation · Premenstrual syndrome · Perception · Attitudes · Adolescent females

## Introduction

The way females perceive menstruation has an effect on their own body image, gender identity, self-acceptance, symptoms attribution, and sexual and health behaviour [1–4]. These attitudes are shaped by personal knowledge and experience, age, myths, traditions, social learning, and cultural beliefs [5–9]. Studies have shown that younger women have more positive attitudes towards menstruation [7] and are more likely to perceive it as a natural process. In a Spanish study, reasons women like about menstruation were: “it’s natural”, “it makes me feel good”, “I feel I’m a woman”, “it’s a way to get rid of toxins” [10]. On the other hand, women dislike menstruation because of the menstrual cycle-related symptoms, feeling of general discomfort, poor quality of life, and blood loss [10, 11]. There were, however, ethnic differences observed on the attitudes towards menstruation. A more positive attitude (higher scores on the Menstrual Attitude Questionnaire) was reported among American than Indian women [12], and British than Indian women [13].

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Although menstruation is physiological, it often leads to physical and psychological problems in women of reproductive age. Menstrual-related symptoms have been reported to affect 75% of adolescents and are common reasons for adolescents seeking medical care, and school absenteeism [14, 15]. Adolescents that have poor perception about menstruation and expected negative consequences from their menstruation reported higher morbidity associated with menstruation [3]. It has also been reported that menstrual-related syndrome leads to high rates of non-participation in school and social activities, deters ability to concentrate in study, and affects academic performances [16, 17]. It has been reported that adolescent girls' feeling towards menstruation was related to their mothers' behaviour, attitudes and their communication with their daughters [4].

In addition to symptoms present during the menstruation phase, it has been estimated that approximately 85–97% of women in their reproductive age reported physical and psychological disorders in the premenstrual phase [18]. Premenstrual syndrome (PMS) is “a condition which manifests with distressing physical, behavioural and psychological symptoms, in the absence of organic or underlying psychiatric disease, which regularly recurs during the luteal phase of each menstrual cycle and which disappears or significantly regresses by the end of menstruation” [19]. The prevalence of severe PMS is variable between 3% and 30% [20, 21]. Attitudes towards menstruation—such as menstruation as a debilitating and bothersome natural event, anticipation of menstruation, and denial of the effect of menstruation—vary with ethnicity, gender role orientation, and are culturally transmitted [9].

Since menstruation is a natural biological process of womanhood, it is important to cultivate an understanding about menstruation. There is a need to impart and reinforce the knowledge of menstrual health and provide appropriate management of symptoms for women to lead a normal active life [22]. Provision of education and information about menstruation, PMS and self-care measures could help adolescent girls to manage the physical and psychological changes associated with menstruation [5].

Although menstrual-related studies have been conducted in many western countries and several Asian countries, data are scarce in the South-East Asian region. It is interesting to explore the beliefs and impact of menstruation in these culturally rich and diverse ethnic populations. Understanding the factors associated with the perception and attitude towards menstruation, and the implications of menstrual symptoms on emotional and physical well-being is fundamental to the promotion of adolescents' menstrual health. Thus, this present study was undertaken to explore the perception and attitudes related to menstruation, PMS and treatment-seeking behaviour among adolescent girls of different ethnocultural groups attending public secondary schools in Malaysia, a fast-

developing country in the South-East Asian region. The extent to which menstrual symptoms impaired functioning was also investigated. The ultimate aim of this study was to provide an insight to the development of reproductive health education on menstrual-related matters.

## Methods

All public secondary schools ( $n=94$ ) in the Federal Territory of Kuala Lumpur, Malaysia were invited to participate in the study. The Federal Territory of Kuala Lumpur is the country's legislative capital, covering an area of 243 km<sup>2</sup> with a population of approximately 1.8 million. Firstly, all school principals were sent written information regarding the study and the approval letter from the Ministry of Education seeking their consent to allow female students in Forms 1–6 of their respective schools to take part in the study. Subsequently, consent was obtained from the students and the parents/caregivers. One class in each form/grade (Forms 1–6) was randomly selected from each participatory school.

In the schools that had agreed to participate, female students of the selected class were asked to self-administer a semi-structured questionnaire guided by a moderator overseen by two to three research assistants. The questionnaire was in two languages (Bahasa Malaysia, the national language of Malaysia and English) and was verified by back translation by the Institute of Language and Literature, Malaysia (Dewan Bahasa dan Pustaka). The questionnaire consisted of four sections: (1) demographic information, (2) attitudes related to menstruation, (3) symptoms in premenstrual and menstrual phase, (4) awareness of PMS, its impact, and treatment seeking, (5) information needs. Questions assessing symptoms of menstruation, soliciting information on seven affective and ten somatic symptoms, was adapted from previous studies [6, 23]. The participants who had reached menarche were asked whether or not they experienced a series of affective (psychological and behavioural) and somatic symptoms related to menstruation. They were asked whether symptoms were absent, mild, moderate, strong or severe in both the premenstrual and menstrual phase. The questionnaire was examined by experts for content and face validity, and pre-tested on a volunteer sample of 20 subjects, after which it was revised.

Data were anonymised and analysed using SPSS 17.0 for Windows (SPSS, Chicago, Ill.). Data analysis consisted of descriptive statistics for frequencies of attitude items as well as demographic variables. Linear correlation (expressed by Pearson's  $r$  correlation coefficient) between the attitude scores and the number of reported symptoms and the severity of symptoms in both premenstrual and menstrual phase were investigated. Multivariate logistic

regression analyses using enter method was performed to examine the predictors for treatment-seeking for PMS with determinant variables (socio-demographic characteristic, self-reported symptom of menstrual severity, and menstrual attitude score). Goodness of fit was assessed with the Hosmer-Lemeshow test. The significance level  $p < 0.05$  was used. The study was approved by the Medical Ethics Committee, University Malaya Medical Center, Kuala Lumpur, Malaysia. Approval from the Ministry of Education Malaysia was obtained prior to the commencement of the study. Each questionnaire was anonymous and confidentiality was assured.

## Results

A total of 1,092 girls from 15 schools took part in the study, with a mean age ( $\pm$ SD) of  $15.19 \pm 1.39$  years, range 13–19 years. The sociodemographic characteristics of the participants are shown in Table 1. There were more Chinese (56.3%), followed by Malays (31.7%) and Indians (11.2%). There were less participations from the upper secondary levels (41.0%) compared with the lower secondary levels (59.0%) due to the school principals' refusal to allow students to participate as the students would be sitting two major national examinations: SPM (Malaysian Certificate of Education) and STPM (Malaysian Higher School Certificate examination, equivalent to "A" Levels). There were very few responses from Form 6 students because most participatory schools do not have Form 6 classes. All except 16 of the 1,092 girls had reached menarche. The mean age of menarche was 12.18 (SD  $\pm 1.07$ ) years. Most girls (79.8%) reached menarche between 11 and 13 years old.

### Perception and Attitude Towards Menstruation

Table 2 shows the participants' attitudes and beliefs related to menstruation among those who had attained their menarche. When the first six items in Table 2 were scored, the attitude mean score was only 2.80 (SD  $\pm 1.88$ ) out of six. The internal consistency of the six-item attitude questions, evaluated by Cronbach's alpha, was 0.719. Among the three ethnic groups, the Malays had a significantly higher mean score (3.44) compared with the Indian (3.21) and the Chinese (2.21) groups ( $\chi^2 = 43.50$ ,  $df = 2$ ,  $n = 0.000$ ). There was statistically significant difference in attitude amongst the four major religions: 90.1% Muslim and 82.8% Hindu participants reported restricted religious activities and prayer ritual during menstruation compared with 45.9% Buddhist and 17.2% Christian ( $\chi^2 = 274.9$ ,  $df = 3$ ,  $n = 0.000$ ). Despite the religious restriction, 48.6% of the Muslim participants were "Happy with monthly menstruation" compared with the 34.2%

**Table 1** Demographic characteristic of participants ( $n = 1,092$ )<sup>a</sup>

Characteristic	<i>n</i> (%)
<b>Ethnicity<sup>b</sup></b>	
Malay	346 (31.7)
Chinese	615 (56.3)
Indian	122 (11.2)
Others	9 (0.8)
<b>Religion</b>	
Islam	352 (32.2)
Buddhist	539 (49.4)
Hindu	108 (9.9)
Christian	90 (8.2)
Others	3 (0.3)
<b>Levels of education</b>	
Lower secondary	
Form 1	159 (14.6)
Form 2	227 (20.8)
Form 3	258 (23.6)
Upper secondary	
Form 4	256 (23.4)
Form 5	170 (15.6)
Form 6	22 (2.0)
<b>Average household income (1 US Dollar = 3.6 Malaysian Ringgit)<sup>b,c</sup></b>	
>RM4,000	248 (24.1)
RM2,000-RM4,000	221 (21.5)
<RM2,000	559 (54.4)
<b>Family type<sup>b</sup></b>	
Parents are married	968 (93.3)
Parents divorced/separated	69 (6.7)
One or both parents deceased	52 (5.0)
<b>Menarche<sup>b</sup></b>	
Post-menarche	1,075 (98.5)
Pre-menarche	16 (1.5)

<sup>a</sup> All values are based on participants self-reporting

<sup>b</sup> Number of respondent do not sum up to 1,092 due to non-responses

<sup>c</sup> Total does not add up to 100% due to rounding

Buddhist, 11.3% Hindu, and 7.8% Christian participants ( $\chi^2 = 50.25$ ,  $df = 3$ ,  $p = 0.000$ ).

### Symptoms Associated with Menstruation

As shown in Table 3, irritability, mood swing and tension were the three most frequently reported affective symptoms in both premenstrual and menstrual phases among participants who had reached menarche. Fatigue and menstrual cramps were highly prevalent somatic symptoms in both the premenstrual and menstrual phases.

At least 80.7% and 83.6% of participants experienced one or more affective and somatic symptoms respectively in the

**Table 2** Attitudes and beliefs related to menstruation amongst the 1,092 participants

Attitude and belief	<i>n</i>	%
Happy with monthly menstruation	257	23.5
Prefer to menstruate every 3 to 4 months	448	41.0
Happy with menstruation because it symbolizes womanhood	676	61.9
Do not want menses	375	34.3
Dislike menstruation as feeling discomfort	902	82.6
Dislike menstruation as feel messy and dirty	783	71.7
Menstruation interferes with sports and social activities	817	74.8
Menstruation restrict religions activities and prayer ritual	668	61.2

premenstrual phase. In the menstrual phase, at least 88.2% and 90.0% experienced one or more affective and somatic symptoms, respectively. The median number of affective and somatic symptoms reported was two for the premenstrual phase, whereas in the menstrual phase, higher medians of three and five were reported for affective and somatic symptoms, respectively. The number of reported affective and somatic symptoms did not correlate with attitude score in both the premenstrual (Pearson's  $r=0.045$ ,  $0.030$ ;  $p>0.05$ ) and menstrual phases (Pearson's  $r=0.000$ ,  $0.009$ ;  $p>0.05$ ). Likewise, the severity of affective and somatic symptoms were also not significantly correlated with the attitude score in both premenstrual (Pearson's  $r=0.061$ ,  $0.028$ ;  $p>0.05$ ) and menstrual (Pearson's  $r=0.007$ ,  $-0.008$ ;  $p>0.05$ ) phase.

## PMS

There were 400 out of 1,092 participants (36.7%) who reported they had heard of PMS. Participants were subsequently informed that PMS is a mental and/or somatic disorder occurring cyclically in the premenstrual phase, after which 608 students (55.7%) said they have experienced PMS. Of these, 68.3% reported PMS caused poor class concentration, restriction of social and recreational activities (61.5%), difficulty to mingle with friends (42.4%), poor class performance (26.5%), and feeling shy or embarrassment of the PMS (16.1%). Only a small proportion (10.3%) consulted a physician for PMS symptoms, while nearly one-third (35.0%) did nothing about

**Table 3** Affective and somatic symptoms in premenstrual and menstrual phase ( $n=1,076$ )

Symptoms	Prevalence (%)		Degree of severity (%)			
			Premenstrual phase		Menstrual phase	
	Premenstrual phase	Menstrual phase	Mild/moderate	Strong/severe	Mild/moderate	Strong/severe
Affective (psychological and behavioural)						
Irritability	64.6	73.7	49.6	15.1	54.0	19.7
Mood swing	66.7	69.5	48.3	13.4	50.4	19.1
Tension	49.5	58.9	39.0	10.5	44.0	14.9
Restlessness	37.0	46.7	31.1	6.0	38.4	8.3
Anxiety	32.3	39.2	29.0	3.3	34.0	5.1
Feeling sad or blue	27.3	34.2	21.6	5.7	36.3	2.0
Loneliness	19.9	22.9	16.6	3.3	16.9	3.3
Somatic						
Fatigue	60.6	75.4	47.8	12.5	53.8	21.7
Cramps	34.0	42.9	27.4	6.5	31.3	11.5
Headache	32.7	38.4	28.4	4.4	32.1	6.2
Backache	32.1	38.4	25.7	6.4	28.1	10.3
Painful or tender breast	27.0	24.2	23.8	3.2	21.5	2.7
Swelling (breast, abdomen)	12.9	13.1	11.7	1.2	11.8	1.3
Hot flushes	21.3	21.5	19.1	2.2	19.1	2.4
Difficulty in concentration	45.2	59.0	38.5	6.7	46.6	12.4
Poor school performance	29.3	39.2	26.2	3.1	34.0	5.1
Decreased efficiency	27.0	39.0	22.8	4.2	31.9	7.1

their conditions. One-sixth (16.6%) reported taking supplements and making dietary changes, and 14.2% reported taking herbal or traditional remedies to alleviate PMS symptoms.

In Table 4, the multiple logistic regression shows that “not taking any action for PMS” was predicted by parental marital status. Participants with parents who are divorced or separated, or with one or both parents were deceased, were more likely to do nothing for PMS. Malays were more likely than the non-Malays to consult a physician for PMS [odds ratio (OR) 1.91; 95% confidence interval (CI) 1.21–3.03;  $p=0.006$ ]. There was a near-significant association between consulting a physician for PMS and the attitude scores (OR 0.90; 95% CI 0.80–1.02;  $p=0.098$ ), where those with lower attitude scores were more likely to consult a physician.

### Information

Only 37.8% of the participants had ever previously obtained information regarding PMS. Among those who had, many acquired the information about PMS from their mothers (62.7%), printed media (magazines and newspapers) (43.6%) and school friends (42.9%), while only 36.1% and 12.1% obtained information from teachers and

the mass media (radio and television), respectively. When the participants were asked to list the information they wanted to know regarding PMS, the majority wanted to know about the prevention and treatment of PMS, followed by the physiology or reasons for PMS.

### Discussion

We found most adolescent girls dislike menstruation because of feeling discomfort and that it is messy and dirty. They preferred to menstruate less frequently, and only 23.5% were happy with monthly menstruation. These findings concur with many other studies, where most women dislike their menstrual periods because of menstrual-associated symptoms and inconvenience, and if given an option, most would prefer less frequent menstrual cycles [24–26]. It is therefore important to provide education on menstruation to adolescent girls approaching puberty [5] to enable them to cope and handle the associated changes accompanying their menstruation. In addition, offering knowledge of possible management to alleviate menstrual symptoms such as menstrual discomfort can assist them to cope with this physiological change.

**Table 4** PMS Results of logistic regression analyses predicting factors associated to treatment-seeking behaviour

Characteristic	Logistic regression OR (95% CI) <sup>a</sup>					
	Model 1: See doctor and take medication			Model 2: Do nothing		
	OR	CI	<i>p</i>	OR	CI	<i>p</i>
Ethnicity						
Malay	1.91	1.21–3.03	0.006**	1.11	0.77–1.61	0.568
Non-Malay	1.00	–	–	1.00	–	–
Levels of education						
Lower secondary	0.76	0.48–1.19	0.227	0.90	0.63–1.28	0.560
Upper secondary	1.00	–	–	1.00	–	–
Average household income (RM)						
>4,000	1.00	–	–	1.00	–	–
2,000–4,000	1.22	0.66–2.25	0.534	0.88	0.54–1.43	0.610
<2,000	1.11	0.66–1.88	0.696	0.85	0.57–1.29	0.450
Family type (parents' marital status)						
Married	0.82	0.31–2.16	0.693	0.34	0.13–0.93	0.040*
Divorced/ Separated	0.68	0.19–2.47	0.556	0.81	0.23–2.84	0.740
One or both parent deceased	1.00	–	–	1.00	–	–
Self-reported symptom menstrual severity	1.01	0.99–1.04	0.370	0.99	0.97–1.02	0.847
Self-reported severity of pre-menstrual symptoms	1.01	0.98–1.03	0.740	0.99	0.98–1.02	0.806
Attitudes toward menstruation	0.90	0.80–1.02	0.098	0.97	0.89–1.07	0.554

\*  $p<0.05$ , \*\*  $p<0.01$

Model 1: Hosmer and Lemeshow test,  $\chi^2$  (8)=4.150,  $p=0.843$ ; Cox and Snell  $R^2=0.027$ ; Nagelkerke  $R^2=0.044$

Model 2: Hosmer and Lemeshow test,  $\chi^2$  (8)=7.093,  $p=0.527$ ; Cox and Snell  $R^2=0.019$ ; Nagelkerke  $R^2=0.026$

Many religions, including Islam, Hinduism and Buddhism, have placed some form of restriction on menstruating women [27]. Many participants in this study follow the rules of their respective religion relating to menstruation. This study showed that the majority of the Muslim participants noted restriction in their religions activities and prayer ritual during menstruation. The Muslims have more stringent rules during menstruation, where women cannot pray or fast during Ramadan, and are prohibited from entering a mosque. Likewise, Hinduism views menstruating women as impure or polluted, and in some places it is regarded as a curse [28]. In Buddhism, although menstruation is generally viewed as a natural process, the Hindu belief and practice somehow has carried over into some categories of Buddhist culture [27]. Very few Christian participants reported menstrual restriction and this could be because Christian denominations do not follow any specific rituals or regulations related to menstruation [27]. However, the extent of myths and rituals influencing religious beliefs remains unclear. This quantitative study has limitation to the in-depth understanding of this issue. Future qualitative study should investigate the possible impact of these factors on the attitudes toward menstruation. Studies in Western countries and in Asia indicated that women who have a negative perception of menstruation were more likely to experience menstruation-related symptoms and have negative effects of menstruation [29, 30].

We found many participants experienced at least one or more effective and somatic symptoms in both premenstrual and menstrual phase. Fatigue and menstrual cramps are common somatic symptoms related to menstruation in adolescents and these findings were concordant with other studies [3, 31]. In addition, the affective symptoms reported by adolescents in this study was similar to other studies [3, 31, 32]. The symptoms of PMS had affected their academic concentration and school performance, and had decreased their overall efficiency. Menstrual cramps have been reported in another study as the primary cause of short-term absences from school, led to high rates of non-participations in school or social activities, deterred girls' ability to concentrate in study, and affected their academic performance [21]. We also found about half of the adolescents had difficulty in concentration during the premenstrual and menstrual phases. Thus, it is important to increase awareness among adolescents on treatment available for menstrual cramps and for physicians to enquire about menstrual symptoms in their consultations.

Many participants experienced at least one or more affective and somatic symptom in both the premenstrual and menstrual phase. We found that the symptoms of PMS had affected their academic concentration, school performance and decreased their overall efficiency. Another study

has found that morbidity was higher among adolescents that expected negative consequences from their menstruation [3]. It has also been suggested that premenstrual psychological symptoms could be the result of negative expectations regarding the menstrual cycle [9, 33]. Nevertheless, our findings did not show significant associations.

We found more than half of the adolescent girls had experienced symptoms of PMS but they were not aware or had never heard of PMS. This is particularly alarming given the impact PMS has on their academic and social functioning as was found in this study. The reason for this lack of knowledge was unknown and was beyond the scope of this study but a possible reason could be a lack of education on menstrual health matters given to adolescent girls and women alike. As a study has reported that adolescent girls' feelings towards menstruation was related to their mothers' behaviour, attitudes and communication with their daughters [4], education information on menstrual matters and PMS has to be given not only to adolescent girls but to women too.

We also found poor treatment-seeking behaviour for PMS. Most participants did nothing for PMS and only a small proportion had consulted a doctor and had taken prescribed medication. It has been reported that women were reluctant to consult a physician because they viewed it as "part and parcel" of female life and they should self-manage the symptoms, while some did not think the physician could do much to help [34]. We found many participants used self-care strategies and lifestyle management techniques to relieve the symptoms of PMS, which was consistent with other findings [34, 35]. The reason for the low rate of consulting a physician for PMS among the Chinese participants could be due to beliefs in the efficacy of traditional Chinese medicine and its common uses for PMS and dysmenorrhea [35]. Another study has reported that women who were older and with more severe PMS symptoms were more likely to seek treatment [36]. Nevertheless, our multivariate analyses showed the level of education and menstrual severity were not predictive of treatment-seeking. Parent's marital status was the only predictive factor for not seeking treatment for PMS. The reason for this will need to be explored in further study.

Most of the participants gather information from non-formal sources. Therefore development of reproductive health education on menstrual-related matters is needed to facilitate adolescents' learning to understand about menstruation, manage their symptoms and to offer support. The role of health education interventions in reducing menstrual pain, depression, and other symptoms of PMS and its impact on various aspects of life among adolescent girls has been shown in many studies [3–5]. As adolescent girls' attitudes towards menstruation may be influenced by their mother's behaviour, attitudes and communication [4], and

we found the majority of the participants acquired information about PMS from their mothers, behavioural-educational intervention for mothers of pre-teens may be essential. Specifically, a culturally individualised menstrual-related educational program would be needed in diverse ethnic populations, as in our population.

## Conclusion

We found adolescents have poor perception about menstruation. The somatic and affective symptoms related to menstruation are prevalent. The symptoms of PMS were associated with functional impairment and quality of life. Education on menstrual-related matters is needed in formal school education to bring about a change of perception about menstruation and menstrual-related symptoms for better reproductive health behaviour.

## Limitations

The results should be interpreted with caution due to the limited number of schools that agreed to participate in the study. Furthermore, the survey was conducted in both urban and suburban settings in the Federal Territory of Kuala Lumpur, Malaysia. Thus, the sample may not be representative of the nation. In addition, the measures of symptoms were self-reported and thus could lead to potential errors. Despite these limitations, the study serves as a useful guide on other Asian communities or countries with multiple ethnic and religious practices, where sexual reproductive health education is not part of the school curriculum.

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