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Health-related Quality of Life in Young Adult Girls with Dysmenorrhea among University Medical Students in Shah Alam, Malaysia: A Cross-sectional Study

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Abstract
Dysmenorrhea is a notably serious crisis among young adult girls and it distresses their quality of life. After menarche, most young adult girls suffer severe pain, irregular menses, too much bleeding, and dysmenorrhea. It is a common gynecological complication affecting more than half of the young adult girls resulting in episodic school absenteeism coupled with a negative impact on social behavior, educational, and sports activities. This study was a cross-sectional descriptive, conducted from September to November 2013 among 210 young adult, female medical students of Management and Science University, using a semi-structured questionnaire. The questionnaire used in this study was associated with the health-related quality of life among young adult girls; questions were related to demography, family menstrual history, prevalence, symptoms, absentees of school, involvement in sports activities, and self-care strategies. This survey was completed and the data was analyzed for the results with percentages and chi-square test applied.

Keywords: Health-related quality of life; Young adult girls; Dysmenorrhea; Sickness absenteeism.

1. INTRODUCTION

Dysmenorrhea is the most recurrent gynecological complaint and an important cause of regular school or work absence among female young adults [1-5]. Dysmenorrhea is broadly categorized into two types, namely primary and secondary, based on the presence or absence of underlying causes. Primary dysmenorrhea is the painful menses in women during menstrual cycle with usual pelvic anatomical structure. It is typically characterized by the onset of pelvic cramps during the beginning of menses and this severe pain diminishes by the next 3 days [6, 7]. Secondary dysmenorrhea is menses pain connected with an underlying pathology of reproductive organs, and it may occur after menarche [8]. It is caused due to endometriosis [9], pelvic inflammatory disease [10], intrauterine devices [11], irregular cycles or infertility problems, and ovarian cysts.

In adolescents, usually, primary dysmenorrhea is connected with regular ovulatory cycles and with pelvic or lower abdomen disorders. While dysmenorrhea is less frequent during the initial 2-3 years after menarche, when nearly all of the menstrual cycles are anovulatory, it becomes more common in mid and late adolescence [1, 9, 12]. Abdominal cramp is the most common symptom of dysmenorrhea, and other menstrual-related symptoms are vomiting, headache, fatigue, back pain, dizziness, and diarrhea. The signs of dysmenorrhea usually begin within a few hours before or after onset and last for the next 24-48 h [13, 14]. Furthermore, pelvic aberrations including endometriosis and uterine anomalies may also be found in several dysmenorrheic adolescents [3, 12].

Several studies have stated that dysmenorrhea usually disrupts adolescents' educational and social life [5, 14-16]. This impact includes sickness absenteeism, reduced day-to-life activities, and inability to communicate with friends, resulting in loss of quality of life among adolescent girls [7, 17, 18]. Worldwide, dysmenorrhea has been projected as the greatest reason for time lost from work and school [16, 19]. It influences their educational performance, social behavior, and sports activities [1, 4].

Symptoms of dysmenorrhea are mainly created by potent prostaglandins (hormone-like lipid compounds) and leukotrienes (mast cell products during inflammation) [3, 12]. Several clinical studies associated with dysmenorrhea have demonstrated that analgesics and nonsteroidal anti-inflammatory drugs are greatly useful inhibitors of prostaglandins and lower the complications of dysmenorrhea [20-23]. Hence, the present study was carried out to determine the prevalence, family menstrual history, symptoms, absentees for school, involvement in sports activities, and self-health-care strategies for girls, and quality of life among dysmenorrheic girls. This evidence would prove the severity of the crisis so that the management/medical dean of schools could pay attention to provide comprehensive health education to their students.

2. MATERIALS AND METHODS

This cross-sectional descriptive study was conducted between September 2013 and November 2013 at Management and Science University, Shah Alam, that included 210 female medical students (in the age group of 17-23 years) who were asked to

complete the self-administered structured questionnaire. Data were collected using a questionnaire about age at menarche, the prevalence, family menstrual history, symptoms, absentees for school, involvement in sports activities, and self-health-care strategies for girls and quality of life among dysmenorrheic female students. In addition, the questionnaire included items about treatment used by participants for dysmenorrhea and consultations required for the relief of symptoms. Female students had willingly participated and completed the questionnaire in 20 min, and they were informed that their response would remain confidential.

The following standard is used to delineate dysmenorrhea (6):

- Next to menarche, pain typically commences within 12 h.
- Inferior abdominal or pain in the pelvic region associated with the onset of menses, which lasts up to 72 h.
- Inferior back pain throughout the menstrual cycle.
- Medial or frontal thigh ache.

School absence regularly occurs during painful menses. It is described as absent a half day to an entire day of school, and class absence is also defined as the person absent in her classes at some stage in the prior 3 months due to menses pain.

The data collected from participants was analyzed using SPSS, version 20.0. The descriptive statistics (frequency, percentage, mean, and standard deviation) were determined by the average age of participants, family history, demography, age at menarche, the length of the cycle, bleed span, frequency of associated signs, prevalence, and healing of dysmenorrhea. The tests of significance (t-test and χ^2 test) were calculated to detect the association between different variables and dysmenorrhea. A p-value of <0.05 was measured, which was statistically significant. Associations between the level of menstrual pain and changes of behavior influenced by menstrual pain at school, homework, class participation, class concentration, tests, and sports participants, and going away with friends, which were analyzed using odds ratio with 95% confidence interval (CI).

3. RESULTS

3.1. Prevalence and Determinants of Dysmenorrhea

In the present study, a total of 210 young, adult, female medical students completed the questionnaire. The average age of the participants was 22 ± 0.9 years, and the average age at menarche was 13.0 ± 0.8 years (Table 1). The incidence of dysmenorrhea occured predominantly in the races of Malay and Indian compared to other races (Figure 1). In addition, dysmenorrhea occurrence was elevated in the low-income population (Figure 2), where it was even greater than 40%. The overall occurrence of dysmenorrhea was 61.9% (61.4 and 63.5% in the urban and rural areas, respectively (Table 1). The difference in the

Table 1: Prevalence of dysmenorrhea and menstrual history in adolescent and young adult medical girls of Management and Science University, Shah Alam.

Dysmenorrhea	**Urban (%) *n* = 158**	**Rural (%) *n* = 52**	**Total (%) *n* = 210**
Present	97 (61.4)	33 (63.5)	130 (61.9)
Absent	61 (38.6)	19 (36.5)	80 (38.1)
Menses history			
Menstrual history	**Dysmenorrhea *N* = 130**	**No Dysmenorrhea *N* = 80**	**P-value**
Age in years	22 ± 0.9	21 ± 1.1	0.001
Age at menarche	13 ± 0.8	12 ± 0.9	0.01
Cycle length	28.8 ± 2.2	28.4 ± 1.8	0.001
Bleed length	6.3 ± 1.1	5.9 ± 1.5	0.001
Menstrual flow			
Scanty	0	0	0.001
Normal	88 (67.7%)	59 (73.8%)	
Heavy	42 (32.3%)	21 (26.2%)	
Regularity			
Regular	54 (41.5%)	47 (58.8%)	0.001
Irregular	62 (47.7%)	28 (35%)	
Variable	14 (10.8%)	05 (6.2%)	
Age, cycle length, and bleed length are presented as mean ± standard deviation.			

Figure 1: Distribution of MSU students according to race.

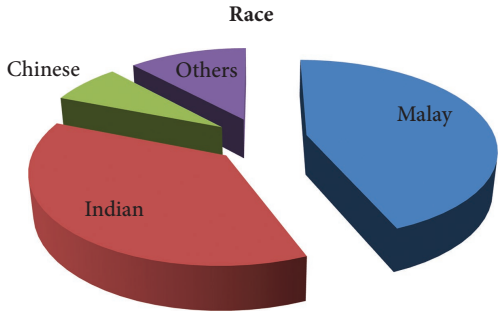

Figure 2: Distribution of MSU students according to level of family income.

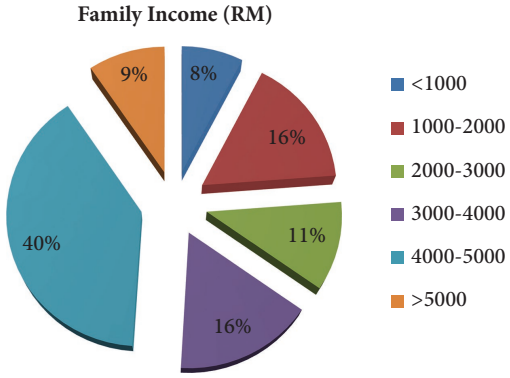

Table 2: Menstruation-associated symptoms among adolescent and young adult medical girls of Management and Science University, Shah Alam.

Symptoms	Dysmenorrhea, *N* = 130		No dysmenorrhea, *N* = 80		P-value
	No.	%	No.	%	
Nervousness	122	93.8	**77**	96.3	**0.000**
Irritability	125	96.2	**72**	90	**0.001**
Depression	124	95.4	**75**	93.8	**0.002**
Dizziness	116	89.2	**71**	88.8	**0.234**
Backaches	123	94.6	**74**	92.5	**0.001**
Leg ache	126	96.9	**71**	88.8	**0.017**
Anger	78	60	**43**	53.8	**0.452**
Headache	113	86.9	**49**	61.3	**0.232**
Sleeplessness	119	91.5	**63**	78.8	**0.001**
Diarrhoea	65	50	**34**	42.5	**0.002**
Nausea/vomiting	97	74.6	**68**	85	**0.003**
Loss of appetite	65	50	**42**	52.5	**0.012**
Acne/flushing	78	60	**56**	70	**0.025**
General ache	93	71.5	**67**	83.8	**0.076**
Tiredness	126	96.9	**76**	95	**0.034**
Tender breast	112	86.1	**67**	83.8	**0.067**
Bloating	122	93.8	**73**	91.3	**0.067**
Mood swings	93	71.5	**67**	83.8	**0.012**

occurrence of the urban and rural participants was significant (Table 1). In addition, the preparation for menarche and mental variables were not significantly connected with dysmenorrhea (Table 1). Findings of Table 1 suggest that participants in the study (study subjects) with a history of older age at menarche had statistically significant ($P < 0.001$) and more prevalence of dysmenorrhea. When asked about the history of the menstrual cycle for girls with dysmenorrhea (dysmenorrheic girls), 47.7% got irregular cycles and 32.3% experienced heavy flow with duration of menses more than 6 days. Among dysmenorrheic girls associated symptoms were headache, vomiting, and diarrhoea (86.9, 74.6 & 50%) respectively (Table 2). The prevalence of dysmenorrhea was significantly high among the participants with family history (58%) of dysmenorrhea (Figure 3). A majority of dysmenorrheic girls was experiencing nervousness (93.8%), irritability (96.2%), depression (95.4%), dizziness (89.2%), tiredness (96.9%), loss of attention in regular work (72.5%), disturbed sleep (54.7%), and loss of appetite (50%) during menstrual period, but these experiences were significantly less in nondysmenorrhoeic girls (Table 2).

3.2. Effect of Dysmenorrhea on Educational, Sports, and Societal Behavior

Among young adult girls with dysmenorrhea, 81.5% indicated that dysmenorrhea limited their class concentration; 76.4% sports participation; 81.5% class participation; 74.6% going out with friends; 75.4% test-taking skills, and 82.4% homework task performance. About 72.2% participants were absent for school days and 70% female students reported as absent for individual classes due to menstrual pain at some stage in 3 months (Table 3). Among participants accounting for school absence, 75% reported as absent for half to 1 day of school, 28% reported as absent for up to 3 days, and 12% reported as absent for more than 4 days. The results further showed that the rate of school absenteeism was very high (72.2%) compared to mild (52.2%) among those participants, which was due to severe menstrual pain (Figure 4). In addition, a significantly larger proportion of participants with severe menstrual pain accounted for school absenteeism, lower educational performance, inadequate communication with friends, and sports involvement than those who had mild menstrual pain ($P < 0.01$) (Table 3).

3.3. Management Pattern to Ease Symptoms of Dysmenorrhea

The young adult girls with dysmenorrhea reported using various therapies to ease their symptoms: medication (73.8%), rest (68.5%), hot tea (34.6%), herbal drinks (67%), heating pad (60%), and exercise (24.6%) (Table 4). Among young adult girls

Figure 3: Distribution of MSU students according to level of family history.

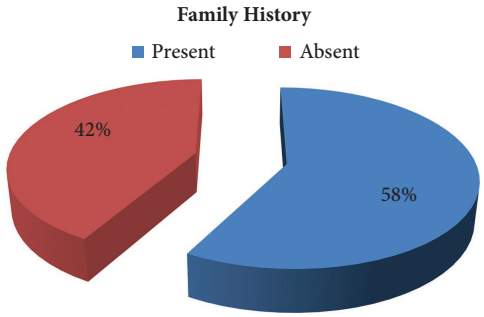

Table 3: Association between dysmenorrhea and limited activities among adolescent and young adult medical girls of Management and Science University, Shah Alam.

Activities	Mild pain* (*n* = 15) %	Moderate pain (*n* = 35)			Severe pain (*n* = 80)		
		%	OR (95% CI)	P-value	%	OR (95% CI)	P-value
School absence	52.2	74.2	1.9 (0.8-3.8)	0.01	72.2	3.7 (2.8-5.8)	0.001
Class participation	61.8	72.5	1.5 (0.9-2.8)	0.04	81.5	4.5 (2.9-5.8)	0.001
Class concentration	70.4	80.5	2.6 (0.9-3.3)	0.001	84.4	4.2 (2.9-5.3)	0.001
Test-taking skills	50.2	67.6	1.9 (0.9-3.6)	0.012	75.4	4.4 (2.9-6.6)	0.001
Sports participation	58.9	74.3	1.6 (0.8-2.4)	0.014	76.4	3.9 (2.8-5.4)	0.001
Homework tasks	77.8	68.4	1.9 (0.9-3.5)	0.043	82.4	4.4 (2.9-6.5)	0.001
Going out with friends	60.4	56.8	2.3 (1.1-3.3)	0.025	74.6	3.7 (2.1-4.3)	0.001
Limitation of sleep	60.3	54.7	2.4 (1.1-3.9)	0.025	76.2	3.4 (2.1-5.9)	0.001
Adverse effects on mood	72.4	89.2	2.4 (1.1-3.6)	0.001	85.9	4.4 (2.1-6.6)	0.001

Figure 4: Distribution of MSU students according to level of menstrual pain.

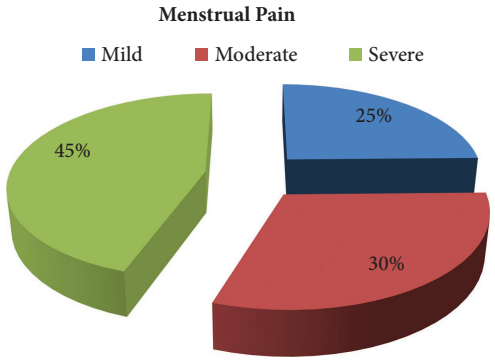

Table 4: Treatment and habits of adolescent and young adult medical girls of Management and Science University, Shah Alam to alleviate symptoms of dysmenorrhea (n = 130).

Options	No.	%
Treatment		
Medication	**96**	73.8
Rest	**89**	68.5
Tea	**45**	34.6
Herbal drink	**67**	51.5
Heating pad	**78**	60
Exercise	**32**	24.6
Habits		
Smoking	**12**	9.2
Alcohol consumption	**16**	12.3
Tea consumption	**46**	35.4
Coffee consumption	**67**	51.5
Coke consumption	**89**	68.5
Chocolate consumption	**98**	75.4
Over weight/obesity	**46**	35.4

with dysmenorrhea who accounted for using medication, 73.8% participants had treated themselves without medical prescription, as they were familiar with the medication to ease their signs of dysmenorrhea. About 69% of participants reported that they did not think a physician could help, while about 31% thought that a physician could help them with their menstrual problems.

4. DISCUSSION

The present study found a comparatively high prevalence of dysmenorrhea (61.9%) among young adult medical girls of Management and Science University, Shah Alam, which falls within the range reported by Klein and Litt [9] (59.7%) and Campbell and McGrath (93%) [2]. The comparable figures were reported in similar studies, which also fell within the same range, by El-Gilany *et al.* [24] (75%), Chiou and Wang [25] (73.3%), and Banikarim *et al.* [1] (85%). The occurrence of severe dysmenorrhea (61.9%) was distinctly prominent than earlier reported among white (23%) and African American (14%) adolescents [5, 9]. Our present study also suggested that Malay adolescent girls (44%) were more affected by severe dysmenorrhea than Indian adolescent girls (39%), but roughly similar to that accounted in Hispanic female adolescent girls (42%) by Banikarim *et al.* [1]. These variations may be due to different pain perception. In addition, the participants rated their menstrual pain throughout the previous 3 months; the occurrence and intensity of pain during each cycle may have been assorted and was not evaluated.

There was a significant association of dysmenorrhea with older age, irregular or long cycles, and heavy bleeding as reported by many studies [13, 14, 24]. Dysmenorrhea was significantly associated with early menarche [13, 14], as well as postmenarcheal age [25]. Preparation for menarche with health education was not a significant variable, in agreement with that reported by Klein and Litt [9], but in contrast with Chiou and Wang [25]. While lower abdominal cramp was the most common

dysmenorrhea symptom, many adolescents suffered from other menstruation–associated symptoms. The symptoms of dysmenorrhea were anxiety, irritability, backache, headache, dizziness, and fatigue. The most common associated symptoms reported by El-Gilany *et al*. [24] were tiredness, headache, back pain, and giddiness.

The rate of school absenteeism in the present study was superior to the previous report in African Americans (23.6%) and whites (14%) by Klein and Litt [9], Whites (45.6%) by Johnson [26] and Hispanics (38%) by Banikarim *et al*. [1]. This dissimilarity of school absenteeism may be associated with diverse cultural perception and different gradient of pain and awareness of relief [27]. Nevertheless, these relationships are often complicated to assess without studying diverse ethnic groups concurrently. In addition, the rate of comparison of school absenteeism is quite tricky due to different time frames, which were used in determining the former one. However, the rate of school absenteeism was higher among participants with severe menstrual pain than mild in the present study, which is consistent with previous investigations [1, 4, 24]. The participants with severe menstrual pain were almost four times more likely to absent school and to have inadequate educational performance than those with mild menstrual pain. Based on these findings, we suggest that the school administrative officials and health program coordinators may assist those dysmenorrheic girls and improve their behavior, school attendance, and educational performance.

Although there was high incidence of dysmenorrhea in young adult girls, participants either did not look for a medical counselor or were undertreated. The majority of adolescents used nonpharmacological methods, such as rest, heat, hot drinks, or sports (mainly for distraction) to treat dysmenorrhea, consistent with previous investigations [1, 28]. Among participants with dysmenorrhea who reported taking medication, 73% reported self-medicating with over-the-counter pain medication without a medical prescription. This figure was higher than previous study findings (30-70%) from different populations [26, 28, 29]. There are quite a few limitations to this study. Secondary dysmenorrhea is quite uncommon among young adult girls, and the causes of menstrual pain could not be included as the participants were not clinically assessed. In addition, the participants were requested to report menstruation and school absenteeism details for the previous 3 months, which may also be directed to recall bias. Furthermore, the information on young adult girls with dysmenorrhea was acquired by the self-administered report and could not be authenticated.

5. CONCLUSION

In conclusion, dysmenorrhea was common among the adolescent population in Shah Alam and led to limitations of their social, sports and academic activities. This impact of dysmenorrhea represented a leading cause of health-related quality of life among young adult girls and women. Hence, school administrators or school health coordinators could play a pivotal role in this aspect by incorporating dysmenorrhea and its treatment into health education curricula. In addition, the school nurse can also effectively help in easing their discomfort during schooltime. Furthermore, school-based clinics or school nurses could intervene by giving awareness about secondary prevention and use of suitable medicine.

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Conflict of Interest
None.

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