Original Article

School performance in pubertal adolescents with dysmenorrhea

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Abstract

Background Dysmenorrhea is a common gynecological symptom reported in adolescent girls. Prevalence of the condition has been reported to be 45 - 75%. Absenteeism from work and school as a result of dysmenorrhea is common (13 - 51% of women have been absent at least once, and 5 - 14% are often absent due to the severity of symptoms).

Objective To compare school performance in pubertal adolescent girls with and without dysmenorrhea.

Methods This cross-sectional study was conducted in June 2010 in adolescent females aged 12 - 18 years from the Musthafawiyah School, Mandailing Natal district, North Sumatera. Adolescent females with and without dysmenorrhea were recruited for this study. All participants completed questionnaires including age of menarche, length of menstrual cycle, length of bleeding, number of sanitary napkins used daily and school absences. School reports from two consecutive semesters in one year were used to evaluate subjects' academic performance. An academic score of higher than 7.5 was considered good performance while scores of less than 7.5 were considered poor. We used the chi-square test to analyze differences in school performance between girls with and without dysmenorrhea.

Results One hundred and sixteen participants were divided into 2 groups, those with and without dysmenorrhea, of 58 subjects each. We found no significant difference in school performance between the two groups, P=0.176 (95% CI -0.009 to -0.048 and P=0.08 (95%CI -0.052 to 0.024).

Conclusion There was no significant difference in school performance of girls with and without dysmenorrhea. [**Paediatr Indones. 2011;51:213-6**].

Keywords: Dysmenorrhea, school performance, pubertal adolescents

Menstruation is the cyclic bleeding from the uterus in response to the complex interactions of the hypothalamus, pituitary and ovaries. Menstruation is periodic bleeding, with approximately 30 to 40 ml of blood loss.[1,2] Menstrual cycle length varies from 21 - 35 days and bleeding lasts for 3 - 7 days.[3] Dysmenorrhea is pain that occurs during menstruation.[4,5] Prevalence estimates vary from 45 to 75% in pubertal adolescents, and absenteeism from school and work due to dysmenorrhea ranges from 13 to 51%. Frequent absences have been reported in 5 to 14% due to severity of symptoms.[6] An epidemiological study in Egypt reported that 75% of pubertal adolescents experienced dysmenorrhea, with 20.3% reporting absenteeism from school because of severity of symptoms.[7]

Primary dysmenorrhea usually occurs in the first 6 to 12 months after menarche and is always associated with ovulatory cycles. Secondary dysmenorrhea is menstrual pain associated with pelvic pathology.[8-11] Primary dysmenorrhea is believed to be associated with

many factors, including behavioral and psychological aspects. Dysmenorrhea among adolescents can adversely affect their personal lives, limiting their social and academic performance.[12]

According to surveys conducted by the American Academy of Pediatrics, school-related problems are the most rapidly growing part of pediatric practice. These surveys suggest that pediatricians spend increasing proportions of their time caring for patients whose primary problems involve psychosocial adjustment and intellectual development.[13]

Generally, dysmenorrhea is one of the major causes and possibly the most important single cause of school absence among adolescent girls.[11] A Tanzanian study showed that dysmenorrhea significantly affected school activities, and adolescent girls with dysmenorrhea reported depression one and a half times more often than those without.[14] Academic performance is the result of cognitive learning activities in school and is usually determined through measurement and assessment. Decreased academic performance is associated with reduced attention to school work, boredom, and difficulty focusing on lessons. School reports may be used to evaluate academic performance. A school report of > 7.5 has been considered good academic performance, while that of < 7.5 has been considered poor.[15] We aimed to compare school performance in pubertal adolescent girls with and without dysmenorrhea.

Methods

We conducted a cross-sectional study in June 2010, at Musthafawiyah School in Mandailing Natal district, North Sumatera, Indonesia. Female adolescents with and without a history of primary dysmenorrhea and fulfilling inclusion criteria were eligible for this study.

Subjects were aged 12 - 18 years, met the diagnostic criteria for primary dysmenorrhea, had regular menstrual cycles within the past 1 year every 21 to 35 days, and had good nutritional status. We excluded girls with irregular menstrual cycles within the past 1 year, and those with pelvic pathology.

Body weight and height were noted and questionnaires were given, including age at menarche, length of menstrual cycle, length of bleeding, number of sanitary napkins used daily and school absences. Nutritional status was measured by World Health Organization (WHO) Centers for Disease Control and Prevention (CDC) criteria. Obesity was noted if body weight/height was ≥ 120% for age, overweight if 110 - 120% and good nutritional status if 90 - 110%. Subjects were divided into 2 groups, those with dysmenorrhea and those without dysmenorrhea, 58 in each group. Academic performance of all subjects was assessed from school reports from two consecutive semesters in one year. This study was approved by the Research Ethics Committee of the University of North Sumatera Medical School .

Data was analyzed by the Statistical Package for the Social Sciences (Windows version 15.0; SPSS Inc, Chicago). Statistical comparison between the two groups was determined by chi-square test. Significance was set at P<0.05 with a 95% confidence interval.

Results

Out of 450 female students, 116 enrolled in our study. Subjects were divided into two groups, 58 with dysmenorrhea and 58 without dysmenorrhea. The mean subject age from the dysmenorrhea group was 15.14 years and that in the other group was 15.30 years. Mean age at menarche in the dysmenorrhea group was 13.17 years and that of the other group was 13.37 years. (**Table 1**)

Table 1. Characteristics of subjects

Characteristic	Dysmenorrhea n=58 (SD)	Without dysmenorrhea n=58 (SD)
Age, years	15.1 (11.65)	15.3 (12.60)
Weight, kg	42.6 (3.24)	42.6 (3.23)
Height, cm	150.7 (4.02)	150.7 (4.03)
Age at menarche, years	13.2 (3.46)	13.4 (3.89)
Length of menstrual cycle, days	29.2 (1.92)	27.3 (1.23)
Length of bleeding, days	5.2 (0.88)	4.5 (0.60)
Number of sanitary napkins/day	4.3 (0.79)	3.1 (0.44)
School absence, days	3.2 (0.88)	2.2 (0.62)

Values in mean (SD)

Table 2 shows the comparison in school performance between the two groups, with and without dysmenorrhea. There was no statistically significant difference in each semester between the two groups (P=0.176, 95%CI -0.009 to -0.048; P=0.08, 95%CI -0.052 to 0.024).

Average length of menstrual cycles was 21 - 35 days, with an average length of bleeding of 3 to 7 days with a blood loss of 30 to 40 ml daily. We found the number of sanitary napkins used daily in the with and without dysmenorrhea groups to be 4.3 days and 3.1 days, respectively. A descriptive study in Hong Kong

Table 2. Comparison school performance between subjects with and without dysmenorrhea

School Performance	Dysmenorrhea (SD)	Without dysmenorrhea (SD)	95% CI	P
Semester 1	7.4 (0.34)	7.4 (0.37)	-0.009 to -0.048	0.176
Semester 2	7.4 (0.33)	7.5 (0.35)	-0.052 to 0.024	0.08

Values in mean (SD)

Discussion

A widely used indicator of dysmenorrheal severity in pubertal adolescents is absence from school. Dysmenorrhea is one of the major causes of school absence among pubertal adolescents.[16] We found school absences in the dysmenorrhea and without dysmenorrhea groups to be 3.2 days and 2.2 days, respectively.

Dysmenorrhea has been associated with psychological and behaviorial factors, as well as affecting adolescents' physical activities and school performance.[17] Studies in Nigeria and the United States reported an association between dysmenorrhea and school performance.[14,18] However, other factors may cause decreased school performance, such as lower school quality.[13] In addition, an Australian study found no association between school performance and dysmenorrhea.[19]

We found the average age of menarche in the dysmenorrhea and without dysmenorrhea groups were 13.2 years and 13.4 years, respectively. These average ages of menarche were late compared with other studies, but we did not examine the causes, such as different ethnicities or environmental factors. An Australian study found the average age of menarche to be 12.7 years. However, in Nigeria, a study of 900 students in two different income groups, reported middle-income girls had an average age of menarche of 12.22 ± 1.19 years, while that of low-income girls was 13.01 ± 1.44 years.[19,20] Some risk factors associated with dysmenorrhea are younger-than-average age of menarche, and longer menstrual cycles and bleeding.[6,7]

showed that 3 years after menarche, 86.9% pubertal adolescents had normal menstrual cycles of 21 to 35 days.[21] A cross-sectional study in India also showed pubertal adolescents had normal menstrual cycles of 21 to 35 days.[22] Likewise, we found menstrual cycle length in the dysmenorrhea group and without dysmenorrhea group to be 29.2 days and 27.3 days, respectively.

An American study among Hispanic students found prevalence of dysmenorrhea to be 85% in the previous month's menstrual cycle, with school absences in as much as 38%.[18] Another study from Ethiopia reported a prevalence of dysmenorrhea of 72%, with school absences in 10.4%.[23] In addition, a Mexican study reported a prevalence in dysmenorrhea of 48.4% in 1152 students examined, consisting of 32.95% of mild degree, 49.7% of moderate degree and 17.4% of severe degree, with school absence of 24%.[24]

From 1546 students, a study in Canada reported 60% had dysmenorrhea, with 6% moderate to severe and 17% unable to attend school.[25] In a cross-sectional study of 250 students in Iran, 71% had dysmenorrhea. Of these, 33% had limitations in physical activity during menstruation, 67% underwent alternative therapy besides visiting a physician, and 15% were absent from school 1 to 7 days per month.[26] Another study in Turkey of 1951 students showed 72.2% had dysmenorrhea, lasting 1 to 3 days (56.6%), less than 1 day (23.5%) or more than 4 days (14.9%). Furthermore, school performance was associated with dysmenorrhea.[27]

Despite these prior reports from various nations, we observed no significant difference in

school performance between girls with and without dysmenorrhea.

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