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Prevalence of Menstrual Disorders among Secondary School Girls in Taif, Saudi Arabia

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Abstract

This study aimed to identify the prevalence of menstrual disorders and unusual symptoms among teenagers. A questionnaire survey was conducted amongst girls aged 15–19 years attending government secondary schools in Taif. Respondents were asked basic demographic information and questions about their menstrual cycles. They were also asked whether their cycles interfered with their activities of daily living. An independent sample t-test and chi-squared test were used to assess the difference between students' frequency of school absenteeism and demographic and puberty characteristics. Of the 450 students who were invited to fill in the questionnaire, 400 (88.9%) completed the survey. Approximately 59.5% of the girls had missed school due to menstruation-related symptoms, and about 79.9% reported general body pain as the primary symptom associated with school absenteeism. Teenagers whose periods were irregular were 2.72 times more likely to miss school than those who had regular periods (p = 0.002). Most respondents (83.5%) reported that menstrual symptoms impacted their general activities of daily living. Overall, menstrual disorders are common among secondary school girls in Taif. Menstrual disorders such as menorrhagia, dysmenorrhea, and metrorrhagia affected the academic and social lives of some students.

Keywords: Adolescent, dysmenorrhea, menstruation disturbances, menstrual cycle

Introduction

The most significant milestone in the life of a developing girl is the onset of menstruation, an event that transitions them into adolescence. In the brain, the hypothalamus and pituitary glands begin to secrete hormones that regulate the shedding of the inner lining of the uterine wall[1]. The exact length of a menstrual cycle differs slightly amongst women and each woman's cycle length varies throughout different phases of her life. Cycles become regular and ovulatory within two years of menarche, with an average cycle length of 28 ± 7 days and are anticipated to remain constant until the premenopausal years when ovarian function diminishes[2].

Amongst adolescent females, menstrual issues are said to be one of the most common and persistent gynecological problems[3]. These disorders are a common source of anxiety for young girls and their relatives. The most common menstrual disorders among adolescents include amenorrhea, irregular or excessive vaginal bleeding, painful menstruation, and premenstrual syndrome (PMS)[4]. Amongst these, the most frequently occurring gynecologic complaint presented to clinicians is painful menstruation or dysmenorrhea[5].

Dysmenorrhea is classified primarily as acute pain in the lower abdomen, occurring before, or with menstruation, in the absence of other suspected causes. The prevalence of dysmenorrhea varies considerably in the literature, with one meta-analysis reporting a rate as high as 94% in girls aged 10–20 years[6]. In another study conducted among senior high school girls in Australia, the authors found that 93% of teenagers aged 15–19 years reported having menstrual pain[7].

In a study that included 435 female medical students at a government university in Jeddah, investigators found that the prevalence of dysmenorrhea was 60.9%[8]. The most common symptom associated with dysmenorrhea was depression (80.8%). Chronic emotional instability was the primary outcome of dysmenorrhea (67.5%), with absenteeism reported in 28.3% of the subjects studied[8].

Furthermore, in a survey of 464 young women enrolled at a university in the eastern province of Saudi Arabia, Rasheed and Al-Sowielem found that 448 women (96.6%) experienced at least one episode of PMS and 176 (37.5%) had a high symptom severity score[9]. In another survey of female medical students in Al-Ahsa District, 35.6% of the respondents reported PMS. Of these, 45% had mild symptoms. Approximately 32.6% and 22.4% of the respondents reported moderate and severe PMS, respectively. Additionally, older students, those who had early menarche and those who lived in rural areas were more likely to experience PMS. Other risk factors for PMS included family income, family history of PMS, and regular cycles[10].

Research on menstrual disorders and PMS in teenagers is however generally lacking in Gulf countries. This study aimed to identify the prevalence of menstrual disorders and unusual symptoms among teenagers attending government secondary schools in Taif.

Materials and Methods

Participants

This cross-sectional survey was conducted on girls aged 15–19 years attending government secondary schools in Taif. Girls in this age group were selected based on previous data (in the mid-19th century, the first menstruation occurred on average between 15 and 17 years old). Although it was estimated that the median age of menarche varied between 13 to 16 years, more recent data suggest that the age of 15 years represents the 95th to 98th percentile for menarche[11].

All Saudi and non-Saudi girls aged 15–19 years attending selected secondary schools in Taif were invited to participate in this survey. Married students were excluded from the analyses.

Sample size calculation

The software EPI info, version 7, was used to deduce that the minimum sample size was 377 based on a target population of 19,623 adolescent females registered in secondary school in Taif. Assuming a menstrual disorder prevalence of 50% and a precision degree of 5%, this sample size would be increased to 400 to compensate for non-response (about 10%).

Sampling method

Multi-stage stratified sampling was adopted.

Stage One
Taif city was divided into four areas (east, west, south, and AlHawyah). The east area includes 35 secondary schools, and the western area has 24 secondary schools. There are 11 and 21 secondary schools in the south and AlHawyah, respectively. Two schools were then randomly selected from each region to arrive at a total of eight secondary schools.

Stage Two

After choosing the eight schools, the same strategy was used to select the classrooms of every graduate. Specifically, three classrooms were randomly selected from each school. Overall, six classrooms were selected from every region, giving a total of 24 classrooms.
Stage Three
In every classroom, about 20 students were randomly chosen randomly from the pool of students who met the inclusion criteria.

Data collection method

An Arabic self-administered anonymous questionnaire was distributed to the students to ensure confidentiality. The questionnaire was divided into the following five sections:

(i) The first section included questions on demographic data (age, marital status, and education level).

(ii) The second section included questions that covered reproductive history (e.g., age of menarche, menstrual pattern, cycle length, and heaviness of bleeding).

(iii) The third section included questions about the effect of menstrual symptoms on school attendance and interference on life activities.

(iv) The fourth section was composed of questions that asked respondents about the use of medication during menstruation.

(v) The fifth section identified teenagers who suffered from PMS. The following criteria, developed by the University of California at San Diego and the National Institute of Mental Health, were used to identify teenagers with PMS: depression, angry outbursts, irritability, anxiety, confusion, social withdrawal, breast tenderness, abdominal bloating, headache, and swelling of extremities. To diagnose PMS, a woman should have one to four symptoms out of 10 or have physical and behavioral symptoms but no affective symptoms[12].

Questionnaire validity

The three experts assessed questionnaire: a consultant in family medicine, one in community medicine, and one in obstetrics and gynecology.

Pilot study

A pilot study was conducted on 30 women who met the inclusion criteria. Additionally, the pilot study helped us figure out how long it would take respondents to complete the questionnaire and determine the clarity of the questions. The results were excluded from the final research report.

Ethical consideration

The Research Ethics Committee at the Saudi Ministry of Education granted permission to conduct this study. Each participant was assured of the anonymity of their responses. Verbal consent was obtained from each participant to assure their voluntary participation in the study. No school authorities or teacher was allowed in the classroom while students were completing the questionnaires. The data were treated confidentially and used only for this research.

Statistical analysis

Data were collected and verified, and variables were coded and entered using the Statistical Package for Social Sciences (SPSS) software, version 20. Data were analyzed using suitable statistical tests. All tests were run with an alpha level of 0.05.

The participants were asked whether their menstrual cycles interfered with their general activities of daily living (ADL) or whether their periods interfered with specific aspects of daily living like socializing, exercising, doing homework, and family and friend relationships. To determine the degree to which PMS symptoms interfered with the teenagers' general ADL, we rated responses on a Likert scale (scored from 1–3). The extent to which menstruation symptoms interfered with ADL was grouped, with 0 = No and 1 = Yes. The total number of ADL aspects as perceived by the teenagers was scored between 0 and 6.

Next, an independent sample t-test and chi-squared test of association were used to assess the difference between students' frequency of school absenteeism and demographic and puberty characteristics. To model the effects of demographic and puberty characteristics on school absenteeism, we used multivariate logistic regression analysis.

Categorical variables are expressed as frequencies and percentages were used to describe, while continuous variables are expressed as means and standard deviations

Results

A total of 450 students were invited to fill in the questionnaire. Of these, 400 completed the questionnaire, giving a response rate of 88.9%. The mean age of the students was 16.7 (SD 0.1) years (interquartile range 14–19 years), and the mean age at puberty onset was 12.9 (SD 1.3) years (interquartile range 9–16 years). Approximately one-third of the respondents were in the first secondary class (Table 1). Most of the girls indicated their periods had been regular during the last 12 months (n = 167, 41.8%). A summary of the respondents' menstrual characteristics is summarized in Table 1.

More than half of the girls surveyed (59.5%) had missed school due to menstruation-related symptoms, with the mean days of absence of 1.4 (SD 0.8 days). Furthermore, more than half of the girls (79.9%) reported general body pain as the primary symptom associated with school absenteeism. Heavy menstrual bleeding was indicated as the reason for skipping school in about 10.4% of the cases. A smaller proportion (8.9%) indicated that nausea and vomiting were the main reasons for skipping school. Other reasons such as depression and tiredness were also cited as reasons for school absenteeism (Table 2).

Less than half of the teenagers (n = 167, 41.8%) reported experiencing severe pains associated with their menstrual cycles. The vast majority of girls (n = 353, 88.3%) responded that a medical doctor did not prescribe the medication, and the drug was effective (n= 44, 11.0%) or sometimes effective (n = 113, 28.3%) in alleviating their symptoms. Further probing revealed that the following medications were used to control pain associated with menstruation: paracetamol (n = 111, 64.9%), ibuprofen (n = 44, 25.7%), aspirin (n = 9, 5.5%), and mefenamic acid (n = 2, 1.2%). Other less commonly used medications such as buscopan and catafast were used by five patients (2.9%).

As shown in Table 3, the vast majority of teenagers (83.5%) reported that menstrual symptoms impacted their general ADL. The mean ADL performance level (1–3 score) was 2.03 (SD 0.5). Further analysis showed that menstruation interfered with one or more aspects of 379 students' ADL (mean, 4.5 aspects of ADL per teenager). Menstrual symptoms had the greatest impact on the following ADL: exercise (82.1%), homework (79.9%), participation in social activities (79.9%), school regularly (79.7%), and relationships with family (67.0%) and friends (62.3%). The mean number of impacted aspects of ADL for the 400 teenagers was 2.03 (SD 0.5) out of a maximum of six aspects of ADL (corresponding to 33.8%). A Pearson correlation test showed a moderate positive association between the mean number of reported physical and psychological complaints and the level of menstrual cycle interference with ADL ($r = 0.3$, $p < 0.010$). No significant association was found between the teenagers' age or age at puberty and perceived impact of menstrual symptoms on ADL.

The most reported premenstrual symptoms experienced by the teenagers were anger and hostility (19.5%), followed by depression (19%), and abdominal bloating (12.1%). The least reported symptoms were leg, thigh and knee pains, appetite changes, sadness and body aches (Table 4).

A chi-squared test showed a significant association between student level and absenteeism ($p = 0.018$); the frequency of absenteeism tended to decline with an increase in grade. Additionally, teenagers who did not skip school due to menstruation-related symptoms reported a significantly lower menstrual volume (mean, 1.9 [SD 1.5]) than those who missed school due to menstruation-related symptoms (mean, 2.4 [SD 1.7]). Furthermore, an independent samples t-test indicated that a significant difference between teenagers who missed school due to menstruation-related symptoms and those who did not ($p = 0.004$). Similalry, an independent sample t-test indicated that teenagers who did not skip school reported that menstruation had a lower impact on their ADL (mean, 3.5 [SD 2]) than those who reported that they had missed school due to their periods (mean, 4.7 [SD 1.5], $p < 0.001$). However, there was no statistically significant difference between school absenteeism and the teenagers' age, puberty age, cycle lengths, menstrual volume, and cycle rhythm (Table 5).

As shown in Table 6, a significant association was found between educational level and school attendance (p = 0.039). Teenagers in their first secondary stage were significantly more inclined to skip school due to their menstrual periods (odds ratio [OR], 2.779; 95% confidence interval [CI], 1.103–7.005, p = 0.030). Similarly, teenagers in their second secondary stage were significantly more likely to skip school than their peers in the third secondary stage (OR, 2.379; 95% confidence interval [CI], 1.192–4.750; p = 0.014), keeping all other factors constant. The teenagers' perceived impact of PMS on ADL-performance level converged significantly on their odds of reporting school absenteeism (p = 0.002). Respondents who experienced a higher impact on their ADL had significantly higher odds of absenteeism than students who reported their menstrual symptoms had a lower perceived impact on their ADL. Students whose periods had a higher impact on their ADL were 1.28 times more likely to skip school than their peers whose ADL were less impacted, after keeping all other factors constant. Moreover, by considering everything else in the model constant, there was a significant association between cycle lengths and the odds of skipping school (p = 0.054).

Furthermore, students who had cycles lengths of 21–35 days were 0.5 times less likely to skip school due to menstrual symptoms than those who had irregular periods (p = 0.048). There was no statistically significant difference between teenagers about their odds of missing school between those whose periods were irregular and those who had regular periods (cycle length < 21 days) and those with regular periods (cycle length > 35 days) (Table 6). Teenagers who had cycle lengths > 35 days had almost 2.5 folds odds of missing school compared to those who had irregular periods; however, the difference was not significant.

Students who reported that their periods affected their lives were 2.4 times more likely to skip school than those who reported the contrary (p = 0.013), when all other predictors were taken into consideration (Table 6). A significant association existed between cycle regularity and school absenteeism. Teenagers whose periods were irregular were 2.72 times more likely to miss school than those who had regular menstrual periods (p = 0.002). Of note, heavy menstruation was not significantly associated with school absenteeism (p = 0.885). There was a significant interaction effect for the teens' monthly period irregularity and heaviness of bleeding on their odds of missing school (p = 0.016)

Multivariate linear regression indicated, however, that there was no significant association between students' age, educational level, age at puberty, and cycle lengths and the impact of menstruation on ADL such as socializing, doing home chores, interacting with relatives and friends, and exercising (Table 7).

Discussion

This analysis shows that menstrual problems were common among the students surveyed. Among the menstrual problems reported by the respondents, the most common was menorrhagia (63.0%), followed by dysmenorrhea (41.8%) and metrorrhagia (33.5%). The relative frequency of menorrhagia in this study is much higher than that reported by other investigators. In a study conducted among girls attending secondary schools in the catchment area of a teaching hospital in Hong Kong, 16.4% and 1.5% of the girls reported heavy and very heavy menstruation, respectively[13]. Other investigators found that 17.6% of adolescent girls in Malaysia reported having heavy periods[14]. However, the disparity between the findings in this study and those of other authors may be due to ethnic and racial variations among the studied populations.

Contrary to our findings, dysmenorrhea was reported as the most common menstrual disorder among teenagers, with the prevalence ranging between 68.7% and 72.6%[13, 15, 16]. The mean age at menarche in these studies were similarly, with some authors reporting a mean age of 12.3 years[13, 16]. and others reporting the mean age at menarche to be 12.9 years[15]. While the mean age at menarche was not reported in the current analysis, the mean age at puberty onset of 12.9 years is comparable with those reported in these studies[13, 15, 16]. Furthermore, we found that approximately 59.5% of the girls surveyed in this study had missed school due to menstruation-related symptoms. The most commonly cited reason for skipping school was general body pain (79.9%); heavy menstrual bleeding was cited as the reason for school absenteeism in about 10.4% of our respondents. In multiple studies conducted among various populations, dysmenorrhea was reported as a common cause of school absenteeism among teenagers, reported in 12 to 90% of adolescents[17, 14, 18–20].

Medication use is common among young menstruating girls. In fact, a previous study reported that 44.5% of secondary school girls in Arar, Saudi Arabia resorted to taking pain killers to alleviate dysmenorrhea[17]. In the study, the respondents also resorted to other methods such as taking herbal drinks or hot baths and seeking from a physician or other persons. Self-medication has also been reported by other researchers, who found that 34.7% of students attending secondary schools in Mansoura took medications to alleviate dysmenorrhea[15]. In the current study, a much higher proportion of respondents (38.5%) took medication for pain associated with menstruation, with the most common being analgesics (paracetamol) and anti-inflammatory agents (ibuprofen and aspirin). Unfortunately, we did not inquire about other pain-relief techniques that the girls might have used to alleviate symptoms of menstrual disorders.

The prevalence of menstrual irregularity in the current study (33.5%) is close to that reported by Abd El-Mawgod et al.[17], who found that 34.4% of their respondents had irregular periods. In other studies conducted among western populations, 43–62% of girls were found to have irregular periods during the first year of menstruation and in some it persisted for three to five years[14, 19, 21]. The traditional assertion is that irregular periods are typical in young teens because they usually have anovulatory cycles [22]. Although menstrual cycles tend to vary among young girls, some authors report that the average length of a normal cycle in this age group varies between 20–45 days (mean of 32.2 days during the first and second gynecologic years)[22]. This is consistent with that reported among the respondents in this study. However, it is essential to determine that an adolescent or teenager understands what is meant by "irregular menstrual bleeding." It is possible that some respondents may have understood that irregular menses meant their cycles were not always exactly 28 days long, that they did not always have their menses on the same day of the week or date of the month, or that the duration of bleeding during each cycle varied from month to month.

In the current study, anger and hostility were cited as the most common premenstrual symptoms experienced by the teenagers. Other symptoms that were reported included depression, abdominal bloating, anxiety, headache, and breast tenderness, which have also been reported in studies conducted in Arab adolescents and teenagers[12, 15]. Furthermore, the quality of life was poor among teenagers who reported that menstrual symptoms interfered with several aspects of their ADL, including their ability to exercise, complete their homework, participate in social activities, attend school regularly, and maintain relationships with relatives and friends. Further analysis showed a positive association between the frequency of complaints and the extent to which respondents' menstrual cycles interfered with their ADL. Such an association has not been previously described although other investigators have reported poor quality of life among girls who complained of dysmenorrhea[15, 17, 23]. In one report, however, the investigators found that girls who experienced more severe menstrual pain reported limited daily activities, decreased ability to focus, school absenteeism, and social withdrawal compared with their peers without severe menstrual pain ($p < 0.001$)[17]. In the same line, we expected that teenagers would be less likely to skip school if menstruation had a low impact on their ADL.

The association between student grade and the likelihood of missing school has not been the subject of many studies assessing menstrual patterns and symptoms among adolescents and teenagers. On the contrary, a lot of emphasis has been placed on the need to provide health education on puberty and menstruation to girls and, in some cases, their mothers[13, 16, 17, 24]. However, that was not the focus of our study. Our finding that teenagers in higher grades were significantly more likely not to miss school may be due to a myriad of factors. First, compared with girls in lower grades, those in higher grades may have learned about important strategies for coping with their symptoms, including what works best to relieve them. Second, girls in higher grades, who are approaching their final year, might be more aware of the importance of performing better academically and consequently, might be less inclined to skip school due to menstruation-related symptoms. However, this is just a hypothesis, and additional data are needed to determine differences across grade levels.

This study has limitations that warrant discussion. First, it has limitations inherent to cross-sectional surveys. The data relied on the participants' account of the symptoms experienced during their periods and could not be verified. Second, what constitutes a "regular or irregular period," or "heavy or light menstrual bleeding" might have been different for each participant. Thus, some form of error might have been introduced during the data collection

process. Third, it is possible that some teenagers may have experienced pain unrelated to their periods and erroneously considered this as menstruation-related. Additionally, the causes of causes of those symptoms were never determined by a healthcare professional. However, this is the first large-scale survey to investigate the pattern of menstruation and its associated disorders among secondary school girls in Taif. The findings of this research can provide insights into potential menstrual health problems among teenage girls in the schools surveyed.

Conclusion

Overall, menstrual disorders are common among teenage girls attending schools in Taif. Menstrual disorders such as menorrhagia, dysmenorrhea, and metrorrhagia affected the academic and social lives of some students. Furthermore, the relatively high rate of self-medication to relieve symptoms associated with menstruation should be a concern among parents, guardians, and school administrators. This is because the use of these over-the-counter medications are not regulated and might represent a source of potential harm to young girls, who might not fully understand dosage restrictions. Although this report is based on teenagers' accounts of the potential problems that they may be facing during their periods, serious considerations should be given to these and measures should be taken to ensure that young girls do not have underlying health issues that might affect their reproductive health.

Conflict of Interest

The author has no conflict of interest.

Disclosure

The author did not receive any type of commercial support either in forms of compensation or financial for this study. The author has no financial interest in any of the products or devices, or drugs mentioned in this article.

Ethical Approval

Obtained.

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Tables

Table 1. Socio-demographic and menstruation characteristics of the respondents

Variables	Frequency	Percentage
Marital status		
Single	398	99.5
Married	2	0.5
Educational level		
First secondary class	134	33.5
Second secondary class	126	31.5
Third secondary class	140	35
Menstrual cyclicity during the last 12 months		
Regular	167	41.8
Irregular	134	33.5
I don't know/Unsure	99	24.8
Number of days between the first period day and the next period		
21–35 days	180	45
< 21 days	103	25.8
> 35 days	19	4.8
My periods are irregular	98	24.5
Heaviness of menstrual bleeding		
Not heavy	41	10.3
Mild	107	26.8
Heavy	252	63

Table 2. Symptoms of premenstrual syndrome and how these affected the teenager's school attendance

Variables	Frequency	Percentage
Missed school days due to premenstrual syndrome		
No	162	40.5
Yes, every period	42	10.5
Yes, sometimes	196	49.0
Main reason for absenteeism (n = 232)		
Body pains	215	79.9
Heaviness of the bleeding	28	10.4
Nausea and vomiting	24	8.9
Others: depression and feeling tired	2	0.7

Table 3. Activities affected by symptoms of premenstrual syndrome

Variables	Frequency	Percentage
Does your period interfere with your activities of daily living?		
No	66	16.5
Yes	334	83.5

Does your period interfere specifically with the following: (Yes, n = 379)		
Exercising	311	82.1
Completion of homework	303	79.9
Social activities	302	79.7
School attendance	281	74.1
Relationship with family	254	67
Relationship with friends	237	62.5

Table 4. Frequency of premenstrual symptoms reported by the teenagers

Variables	**Frequency**	**Percentage**
Anger, hostility outburst or irritability	175	19.5
Depression	171	19.0
Abdominal bloating	109	12.1
Anxiety	98	10.9
Headaches	96	10.7
Breast tenderness	90	10.0
Social withdrawal	49	5.5
Confusion	41	4.6
Swollen extremities	21	2.3
Upper and lower back pains	19	2.1
Abdominal pain	13	1.4
Other symptoms: sadness, body aches, appetite changes	8	0.9
Leg, thigh, and knee pains	8	0.9

Table 5. Association between school absenteeism and demographic and menstrual characteristics

Variables	**No (n = 162)**	**Yes (n = 238)**	***p***
Age (years)	16.8 (1.1)	16.7 (1)	0.179
Puberty age (years)	12.9 (1.4)	12.8 (1.2)	0.542
Educational level			
First secondary class	48 (29.6%)	86 (36.1%)	
Second secondary class	44 (27.2%)	82 (34.5%)	0.018
Third secondary class	70 (43.2%)	70 (29.4%)	
Days between menstrual periods			
21–35 days	84 (51.9%)	96 (40.3%)	
< 21 days	39 (24.1%)	64 (26.9%)	0.107
> 35 days	5 (3.1%)	14 (5.9%)	
My period is irregular	34 (21%)	64 (26.9%)	
Menstrual period heaviness			
No	22 (13.6%)	19 (8%)	
Mild	48 (29.6%)	59 (24.8%)	0.065
Heavy	92 (56.8%)	160 (67.2%)	

Irregularity of menstrual cycle			
Yes	54 (33.3%)	78 (32.8%)	0.907
No	108 (66.7%)	160 (67.2%)	
Annoying symptoms (frequency)	1.96 (1.5)	2.4 (1.7)	0.004
Impact on ADL performance level*	3.5 (2)	4.7 (1.5)	< 0.001

Abbreviation: ADL, activities of daily living

* The ADL performance score is measured between 1–3, with 1 denoting poor overall performance and 3 denoting very good performance.

Table 6. Multivariate logistic regression model showing the association between the teenagers' demographic characteristics, coping mechanisms, and menstrual characteristics with their odds of skipping school

Variables	**Odds Ratio**	**95% CI for OR**		***p***
		Lower	**Upper**	
Educational level (third secondary level)				0.039
First secondary level	2.779	1.103	7.005	0.030
Second secondary level	2.379	1.192	4.750	0.014
Age (years)	1.250	0.858	1.820	0.245
PMS impact on ADL-performance level	1.276	1.097	1.485	0.002
Total number of annoying symptoms	1.070	0.917	1.250	0.390
Days between periods (irregular)				0.052
Days between periods (21–35 days)	0.487	0.239	0.993	0.048
Days between periods (< 21 days)	0.756	0.359	1.592	0.461
Days between periods (> 35 days)	2.331	0.635	8.561	0.202
Effectiveness of Medications in alleviating symptoms (effective)	1.371	0.310	6.060	0.677
Interference of period with general life (yes)	2.414	1.200	4.856	0.013
Take medications for pain (yes)	2.573	0.589	11.238	0.209
Menstrual cycle volume (not heavy)				0.885
Menstrual cycle heaviness (mild)	1.130	0.440	2.901	0.800
Menstrual cycle heaviness (heavy)	1.151	0.653	2.030	0.628
Period irregularity (yes)	15.454	2.723	87.714	0.002
Interaction (menstrual irregularity/heaviness)	2.124	1.154	3.912	0.016
Constant	0.000			0.018

Abbreviations: ADL, activities of daily living; CI, confidence interval; OR, odds ratio; PMS, premenstrual syndrome.

Table 7. Multivariate linear regression showing combined and individual associations between demographic and menstrual characteristics and school attendance with impact of menstrual symptoms on activities of daily living performance

Variables	**B**	**SE**	***p***
(Constant)	-0.780	1.980	0.694
Age (years)	0.117	0.124	0.346
Educational level (class)	-0.163	0.152	0.285

Age at puberty (years)	0.054	0.060	0.373
School absenteeism (yes)	0.783	0.164	< 0.001
Impact of periods on general life (yes)	1.924	0.213	< 0.001
Period heaviness (heavy)	0.351	0.115	0.002
Cycle length	0.025	0.077	0.750
Period irregularity (yes)	0.049	0.197	0.803

Abbreviation: SE, standard error.