

Menstrual disorders and its effect on life activities of secondary school students in Abha, Saudi Arabia

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Abstract

Background

Menstrual disorders including dysmenorrhea is a common problem in adolescent girls however they have attracted little or no attention in the public health agenda of most countries including Saudi Arabia. The aim of this study was to establish menstrual pattern among the teenagers, identify the common menstrual problems and study its impact on their life activities.

Methods

This cross-sectional study was carried out in Abha city among 445 secondary-school girls during the academic year 2016 - 2017. Menstrual Disorder of Teenagers (MDOT) questionnaire was used for data collection.

Results

The mean age of the study subjects was 16.27 ± 1.45 years while the mean age at menarche was 12.9 ± 1.28 . One in three girls reported irregular menstruation. Heavy bleeding was reported by 46/7% of the girls. Dysmenorrhea was present in 75.3% girls and 25% reported severe pain. High interference in daily life activity due to dysmenorrhea was reported by 83.9% and around 70.3% miss school. In girls reporting dysmenorrhea, there was a disturbance in school attendance among 86.5% as compared to 13.5% in those without dysmenorrhea ($p < 0.001$) $OR = 2.95$ (95% CI 1.78-4.91). In girls reporting dysmenorrhea, there was a disturbance in doing physical activity among 81.1% as compared to 18.9% in those without dysmenorrhea ($p = 0.03$), $OR = 1.67$ (95% CI 1.04-2.68). Dysmenorrhea, heavy bleeding and feeling unwell significantly interfere with the life activities and among the six daily life activities, attending school was significantly affected due to menstrual symptoms.

Conclusions

This study confirmed that dysmenorrhoea is a common problem among adolescent school girls. A number of physical and emotional symptoms associated with dysmenorrhea affects their quality of life. Girls experiencing symptoms like moderate to severe pain that affects school attendance and interference with life activities should be effectively managed by increasing awareness.

Background

Adolescence is the period of developmental transition between childhood and adulthood, involving multiple physical, intellectual, personality, and social developmental changes [1]. One of the major physiological changes that take place in adolescent girls is the onset of menstruation. In adolescents, menstrual disorders are a common problem. The most common menstrual disorders reported from studies are, irregular frequency of menstruation, premenstrual syndrome, irregular duration of menstruation, dysmenorrhoea, polymenorrhoea and oligomenorrhoea [2, 3]. Of these, dysmenorrhea is the

commonest problem experienced by most of the adolescent girls. The prevalence of dysmenorrhea reaches up to 90% in some studies [4, 5].

Dysmenorrhea is defined as a sharp painful menstrual cramp in the lower abdomen and menorrhagia is heavy and prolonged menstrual bleeding [6]. It is often accompanied by other symptoms including dizziness, fatigue, sweating, backache, headache, nausea, vomiting, and diarrhea all occurring just before or during the menstruation. Severity of menstrual pain ranges from moderate to severe among adolescents. Adolescent girls suffering from moderate to severe pain that is associated with a number of menstrual symptoms, should be appropriately managed to reduce menstrual morbidity [5].

Given the availability of effective medications, and despite the negative impact of dysmenorrhea, only 14–18% of adolescents seek medical advice, and about half take medications to alleviate their symptoms [6]. Due to its importance, different treatments including pharmacological and non-pharmacological treatment approaches such as taking nonsteroidal anti-inflammatory drugs (NSAIDs), herbal, dietary therapies, yoga, meditation, and acupuncture have been used to lessen the effects of dysmenorrhea [6, 7].

Menstrual problems pose many physical, sociocultural and economic challenges that may hinder with their life activities mainly ability to attend school or to participate in physical activities. Dysmenorrhea is a cause of frequent short-term work and school absenteeism and limitations on social, academic, and sports activities in adolescent girls [8, 9, 10]. Girls who regularly miss school in menstruation, lose approximately 10–20% of the academic year [11, 12]. Loss of school time may affect their school performance as stated in an Ethiopian study where about 90% of girls stated that their academic performance declined after menarche [13].

Although menstrual problems are common problems of adolescent females, they have attracted little or no attention in the public health agenda of most countries [14]. Many factors are responsible for the low public attention accorded to menstrual health and its effects on daily life of adolescents. These included cultural, social and economic factors. People perceive the issue of menstruation as a personal affair that need not be discussed publicly. In some cultures it is considered an impurity and female are banished during their monthly cycle from household activities [15, 16].

Although studies have examined menstrual pain and symptoms in adult Saudi women, very few attempts have been made at exploring menstrual cycle problems among adolescents. Thus, the aim of this study was to establish menstrual pattern among the teenagers, identify the common menstrual problems and study its impact on their life activities.

Methods

Participants, setting & design

This cross-sectional study was carried out in Abha city, Assir province of Saudi Arabia. The target population was female secondary-school students during the academic year 2016 to 2017. The city has a total of 31 female government secondary schools. Multistage cluster sampling technique was used to select the schools. Nine schools were selected for the study. The students in level 2nd and 3rd (age 14–19 years) who were present in the school on the day of data collection were included, which yielded a study sample of 445. The data was collected between October to December 2017.

Research Tool

Menstrual Disorder of Teenagers Questionnaire (MDOT) designed by [5] was used as a research tool. Data was gathered on the students' age, age at menarche, regularity of the cycle, length and duration of the cycle, amount of bleeding, pain during menstruation, severity of the pain, associated physical and emotional symptoms experienced during menstrual cycle, and medication used, if any. Questions were included to measure the interference with menstrual symptoms and dysmenorrhea on daily activities. The menstrual related experiences of the participants over the past six months were collected. To adapt the questionnaire to Saudi cultural preferences, two questions related to sexual behaviour and one question on casual paid work during periods were deleted .

For the purpose of the study, regular menstruation is defined as a cycle repeated once every 28–32 days with a duration of 5–7 days [5]. Dysmenorrhea is defined as crampy pelvic pain, abdominal pain or backache on the first day of the menstrual period and lasting upto 3 days[17, 18]. Heavy bleeding is defined as having to use two pads at a time [18].

To measure the intensity of menstrual pain, a scale of 0–10 was used. Zero represents no pain at all and 10 indicates severe pain. The students were asked to rate the intensity of pain by marking on the number. The score marked on the scale were classified into mild dysmenorrhea if it was between 1 and 3, moderate between 4 and 7, and severe between 8 and 10 [5].

Self –perceived interference on six daily life activities was measured. These activities included school attendance, completing school work, relationship with family and friends, social activities, sport & exercise. A rating scale of 0–10 was used. The score of 5–10 was classified as high interference and 0–4 as low interference[5].The questionnaire was translated in Arabic language by an authorized translator. Pretesting was done on fifteen students in order to ensure its comprehensibility, linguistic accuracy and time taken for completion. The data from pilot study was not included in the main study.

Method Of Data Collection

Data was collected through self-administered questionnaire. A letter was issued to the selected school heads regarding all information about the study. Upon the school head's agreement to participate in the study, data collection was conducted by the researchers three days per week between October to

December 2017. A teacher was present to assist in the activities during data collection. The students were informed of the objectives of the study and how to fill in the questionnaire. They were explained about dysmenorrhea, associated symptoms, how to rate the intensity of pain and the rating method of menstrual interference on their daily life activities. Prior to obtaining verbal consent, all students were clearly informed that participation in the study was voluntary, the questionnaire would be anonymous, and the data collected would be strictly confidential and used only for this study.

Analysis Of Data

The collected data were verified by hand before computerized data entry. Descriptive statistics such as frequencies and percentages were computed for discrete variables and the mean and standard deviation were computed for continuous variables. Pearson's chi-square test was used to test the association between variables of interest. Multivariable logistic regression analysis was performed to identify the menstrual symptoms that were independently associated with high interference in daily life activities and to identify the most affected daily life activity. P-values ≤ 0.05 was considered as statistically significant to test the obtained results. The Statistical Package for Social Sciences (SPSS) software version 22.0 was used for data analysis.

Results

A total of 445 adolescent girls were included in the study. Their mean age was 16.27 ± 1.45 years, with a minimum age of 14 and maximum of 19 years.

Table 1 describes the menstrual characteristics. The mean age at menarche was 12.9 ± 1.28 , with a minimum of 9 years and maximum of 16 years. One in 10 girls reported age at menarche less than 12 years and almost two thirds had menarche between 12–13 years, and about one in four had menarche at age more than 13 years.

Table 1
Menstrual characteristics of the respondents

Characteristics	Number & Percentage
Menarche	
< 12	45(10.1)
12–13	279(62.7)
> 13	121(27.2)
Menstrual pattern	
Regular	294(66.1)
Irregular	151(33.9)
Cycle length	
21–28 days	210(71.4)
> 28days	84(29.6)
Heavy Bleeding	
No	237(53.3)
Yes	208(46.7)
Dysmenorrhea	
Present	335(75.3)
Absent	110(24.7)
Severity of pain (n = 335)	
Mild pain (1–3)	151(45.1)
Moderate pain	100(29.9)
Severe pain	84(25.0)
Medication use	
Yes	274(61.6)
No	171(38.4)
Symptoms	
Change in appetite	236(53.0)
Nausea	174(40.9)
Bloating	189(42.5)

Characteristics	Number & Percentage
Diarrhoea	175(39.3)
Vomiting	128(28.8)
Indigestion & heartburn	113(25.4)
Pelvic pain	233(52.4)
Leg pain	167(37.5)
Low back pain	322(72.4)
Headache	246(63.3)
Dysuria	185(41.6)
Itching	161(36.2)
Dizziness	157(33.3)
Low Mood	250(56.2)

One in three girls reported irregular menstruation. Among those with a regular pattern of menstruation (66.1%), a cycle length of 21–28 days was reported by 71.4% and more than 28 days by the remaining 29.6%. Heavy bleeding was reported by 46/7% of the girls. Dysmenorrhea was present in 75.3% girls. Severity of pain among those who reported dysmenorrhea varied between mild, to moderate and 25% reported severe pain. Among those with dysmenorrhea, most common medication used were NSAIDs (50%), while 30% used herbal preparations.

On an average 2 symptoms related with gastrointestinal and two with aches and pains were reported. Commonly reported gastrointestinal symptoms included poor appetite (53%), nausea (39.1%), bloating (42.5%), vomiting (28.8%), indigestion and heartburn (25%). Pain was reported by majority of the girls, including low back pain by 72% and leg pain by 37.5%, headache by 63.3% and dysuria by 41.6%. Other symptoms reported were low mood by 56.2%, dizziness (33.3%) and itching by 36.2%.

Table 2 shows the interference of menstrual symptoms on daily life of the respondents. The symptoms which highly interfere in life were mood disturbance (80%), dysmenorrhea (83.9%), fatigue (75.5%), feeling unwell (73.7%), heavy blood flow (51.9%). This interference in daily life occurred for 17% of girls in all or most periods (33%), while 44.7% reported the interference in some periods.

Table 2
Menstrual symptoms interference in daily life activities

Variables	Degree of interference in daily life	
	Low interference (Number & %)	High Interference (Number & %)
Menstrual symptoms		
Mood disturbance	88(19.8)	357(80.0)
Dysmenorrhea	54(16.1)	281(83.9)
Tiredness/Fatigue	109(24.5)	336(75.5)
Feeling Unwell	117(26.3)	328(73.7)
Heavy blood flow	214(48.1)	231(51.9)

The effect of dysmenorrhea on life activities is presented in Table 3. A total of 313(70.3%) miss school. On an average, all girls, irrespective of whether they suffer from menstrual pain or not, miss one day of school. However, the mean number of missed school days for the girls with dysmenorrhea is 2 days. Seventy seven(17.3%) girls miss school in all periods, 149(33.5%)in most periods, while 20 girls(4.5%) reported never missing school. Statistically significant differences were observed between girls with and without dysmenorrhea in two daily life activities, namely attending school and sports /physical activities. In girls reporting dysmenorrhea, there was a disturbance in school attendance among 86.5% as compared to 13.5% in those without dysmenorrhea ($p < 0.001$) OR = 2.95(95% CI 1.78–4.91). In the group with dysmenorrhea, there was a disturbance in doing physical activity among 81.1% as compared to 18.9% in those without dysmenorrhea ($p = 0.03$), OR = 1.67(95% CI 1.04–2.68). The other daily life activities of completing school work, relationship with family and friends, and social activities did not show a significant difference between the two groups however in all activities, higher proportion of girls in the group with dysmenorrhea reported interference as compared to those without dysmenorrhea.

Table 3
Relationship between life activities and dysmenorrhoea

Life activities	Dysmenorrhoea (Number & %)		Chi-square, p value	OR & 95%CI
	No	Yes		
School Attendance				
Low Interference	87(31.6)	188(68.4)	18.51, < 0.001	2.95(1.78–4.91)
High Interference	23(13.5)	147(86.5)		
Sports and exercise				
Low Interference	80(28.0)	206(72.0)	4.55, 0.03	1.67(1.04–2.68)
High Interference	30 (18.9)	129(81.1)		
Completing School Work				
Low Interference	82(27.3)	218(72.7)	3.38, 0.06	1.57(0.96–2.55)
High Interference	28(19.3)	117(80.7)		
Relation with Family				
Low Interference	74(24.3)	231(75.7)	0.11,0.74	0.92(0.58–1.46)
High Interference	36(25.7)	104(74.3)		
Relation with Friends				
Low Interference	79(24.6)	242(75.4)	0.01,0.93	0.97(0.61–1.58)
High Interference	31(25.0)	93(75.0)		
Social activity				
Low Interference	77(26.1)	218(73.9)	0.89,0.343	1.25(0.78–1.99)
High Interference	33(22.0)	117(78.0)		

Relationship between severity of pain and interference in life activities is presented in Table 4. Among all six activities, degree of pain highly interferes with attending school, completing school work, and relation with friends.

Table 4
Relationship between severity of pain and interference in life activities

Life activity	Severity of pain				Chi-square p-value
	No pain	Mild	Moderate	Severe	
Attending School					
Low Interference	87(31.6)	100(36.4)	54(19.6)	34(12.4)	33.93,<0.001
High Interference	23(13.5)	51(30.0)	46(27.1)	50(29.4)	
Sports and exercise					
Low Interference	80(28.0)	94(32.9)	63(22.0)	49(17.1)	5.05, 0.16
High Interference	30(18.9)	57(35.8)	37(23.3)	35(22.0)	
Completing School Work					
Low Interference	82(27.3)	109 (36.3)	63(21.0)	46(15.3)	11.12,0.01
High Interference	28(19.3)	42(29.0)	37(25.5)	28(26.2)	
Relation with Family					
Low Interference	74(24.3)	111(36.4)	69(22.6)	51(16.7)	4.21,0.24
High Interference	36(25.7)	40(28.6)	31(22.1)	33(23.6)	
Relation with Friends					
Low Interference	79(24.6)	117(36.4)	75(23.4)	50(15.6)	9.21,0.027
High Interference	31(25.0)	34(27.4)	25(20.2)	34(27.4)	
Social Activity					
Low Interference	77(26.1)	108(36.6)	60(20.3)	50(16.9)	6.02, 0.11
High Interference	33(22.0)	43(28.7)	40(26.7)	34(22.7)	

Table 5
Logistic regression Factors // menstrual symptoms associated with high interference in life activities

Symptoms	p	aOR	CI
Dysmenorrhea	0.001	2.62	1.49–4.62
Heavy bleeding	0.002	2.31	1.37–3.91
Feeling unwell	0.028	2.00	1.1–3.72
Daily activity			
Attending school	0.001	2.61	1.47–4.59

Among all menstrual symptoms, Logistic regression depicts that dysmenorrhea, heavy bleeding and feeling unwell significantly interfere the life activities and among the six daily life activities, attending school was significantly affected due to menstrual symptoms (Table-5).

Discussion

This study has for the first time in Aseer region, established the distinctive experience of menstruation and its effect on daily life activities for a sample of Saudi teenage girls. There are many important milestones in the life of a girl as she grows to become a woman. One of the most important events during the sexual development is the first episode of menstrual blood flow described as menarche. This important developmental milestone in females has been found to vary greatly across countries [19]. Globally, the average age of onset of menarche is 12.4 years [20]. In the present study age at menarche was reported 12.9 years, which is similar to the global average and also to that reported from other countries like Tanzania [21], Hong Kong [22], Lebanon [23], and Saudi Arabia [24].

Menstrual cycle is recognized as a vital sign that is indicative of the overall health of young females [20]. The average menstrual cycle is 28 days, can range between 21–35 days and lasts for a period of 3–7 days [5]. Menstrual cycle variability or regularity is associated with a variety of factors, and in teenagers it is most commonly attributed to immature H-P-O axis [25]. Similar to teenagers around the world, our study reported one in three girls with irregular menstruation or cycle length of more than 28 days [5, 26]. However, heavy bleeding was reported by a higher proportion girls as compared to other studies [26].

Menstruation may be associated with various symptoms occurring before or during menstrual flow. Commonly reported symptoms in our study included poor appetite, nausea, bloating, vomiting, indigestion and heartburn. Pain was reported by majority of the girls which characteristically was low back pain, leg pain, headache and dysuria. Other symptoms included low mood, dizziness and itching. These symptoms are comparable to patterns of menstrual illness reported by other studies [1, 18, 27].

Dysmenorrhea is a common problem among adolescent girls cutting across regional and social boundaries [1, 5, 13, 18]. As many as 90% of adolescent females worldwide reported suffering from it.

[10]. However, our study reported that more than 75% of girls suffer from dysmenorrhea. Influence of dysmenorrhea is largely dependent upon the severity of pain. The severity of menstrual pain is described as ranging from mild to severe [5]. In the current study, 25% girls with dysmenorrhea described it as severe. This is higher than the figure of 10–20% in earlier studies [9, 10]. The disparity in the reported pain severity may be linked to individual variation in pain tolerance along with cultural differences in pain perception.[28]

Among those with dysmenorrhea, most common medications used were NSAIDs, followed by herbal preparations. Though the most commonly used method, NSAID use in this population was lower than that reported in an Australian study [5]. The pattern of medication use, both herbal and conventional, is converse to that reported from Ethiopia [27] where more than sixty percent of the respondents use home remedies as a primary management option followed by NSAIDs.

There are many menstrual symptoms which interfere in the daily life of the adolescent. These include dysmenorrhea, mood disturbance, fatigue, feeling unwell, heavy blood flow [5]. Many studies have reported that school absenteeism, poor concentration, low mood, physical inactivity and disturbed behaviour are the most important effects of dysmenorrhoea [5, 11, 14, 26, 27].

In an Australian study, girls reported 26% school absence [5], while it was higher in Tanzania, Iraq and India [1, 18, 21]. Similarly our study showed that the most profound effect of dysmenorrhea was on school activities like attending school and completing school work. Around 60.0% of the girls missed school due to dysmenorrhea. This school absenteeism is significantly related to the pain intensity.

A study showed that girls could miss up to 4 consecutive days of school every month because of their periods, meaning that they missed 10–20% of school time. [12]. Similarly in Bangladesh, absentee girls missed an average of 2.8 days each menstrual cycle, constituting approximately 16% of the academic year [11]. In our study girls missed an average 2 days of school during each menstrual period, which amounts to approximately 8.0% of the total academic time each year. This high absenteeism may seriously impact on the academic achievement of girls [29], however this is not addressed in the current study and deserves further investigation.

In a recent study from India, more than three fourth of the study participants stated that their menstrual symptoms were associated with poor physical activity [30]. Another Indian study showed that more than half students avoided participation in sports activities at school due to menstruation [31]. Similar findings were observed by Khamdan et al. [32] who reported that 62% girls stopped exercising during their period. Our findings are consistent with these studies. High interference of menstrual symptoms in daily activities may be attributed to the cultural taboos associated with menstruation.

Many studies have pointed out that the severity of menstrual pain is the most prominent cause of interference in life activities. Severe pain was reported by 25% of our respondents and 81% of those missing school attributed it to severely painful periods. Our findings are supported by other studies where pain was described as severe and distressing enough to stop normal daily functions at work, home, or

school by 10–20% of the respondents [9, 10]. Other studies have mentioned that non availability of menstrual hygiene facilities in school like unlocked toilets, unavailability of sanitary pads in schools, feelings of shame, anxiety about leakage, and staining of their uniform as reasons for school absenteeism [11, 27, 31]. In the current study we did not explore these areas which are essential to foster a better of understanding of the reasons for high school absenteeism among the study group. Further in-depth study using a mixed method would help to identify this.

Limitation

This study was conducted in one city in the Kingdom of Saudi Arabia. As a result the findings of the study cannot be generalized to all Saudi adolescent school girls. Further research over a wider area larger sample is recommended.

Conclusion

This study confirmed that dysmenorrhoea is a common problem among adolescent school girls. A number of physical and emotional symptoms associated with dysmenorrhea affects their quality of life. Girls experiencing symptoms like moderate to severe pain that affects school attendance and interference with life activities should be effectively managed by increasing awareness.

Abbreviations

MDOT- Menstrual Disorder of Teenager

CI-Confidence Interval

OR-Odds ratio

AOR-Adjusted odds ratio

NSAIDS-Non steroidal anti-inflammatory dugs

SPSS- Statistical package for social sciences

H-P-O Axis - Hypothalamus-Pituitary-Ovarian Axis.

Declarations

Ethics approval and consent to participate:

Informed consent was obtained from all participants and parent of those less than 16 years old prior to data collection. All the selected respondents and parents were given assurance of confidentiality that the information gathered will be used exclusively for research purposes. This study was approved by the

Institutional Review Board of the College of Medicine; King Khalid university (KKU) (Reference #: REC: 2015/05/13). All necessary official approvals to conduct this study were obtained.

Consent for publication: Not applicable

Availability of data and materials:

The data that support the findings of the current study are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Author's contributions:

SN was the main author of the manuscript. SA planned the study. SN, SA, AF, AA and MM contributed to the data analysis and manuscript writing with assistant and supervision of SA. All authors approved submission of the final manuscript.

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