IJMRP

Original Research Article.

Menstrual Disorders and Self-Management among Secondary School Students in Abha City

Samah H. Al-Rehaili[1*], Sara H. Al-Rehaili[2]

[1*]Alsenaya`a Primary Health Care Center, Ministry of Health, Assir Region, Kingdom of Saudi Arabia.
[2]College of Medicine, Umm AlQura University, Makkah, Kingdom of Saudi Arabia.

ABSTRACT

Background: Menstrual dysfunction occurs in approximately 75% of adolescent girls, and may affect the life of adolescent and young adult women.

Objectives: To assess the normal menstrual pattern and prevalence of menstrual disorder, find out the types of menstrual disorders, identify the self-management of menstrual disorders and correlate the history of menstrual cycle with pattern of menstrual disorders and other selected background variables among secondary school students.

Subjects and Methods: A cross sectional study was implemented among a representative sample of female secondary students in Abha city. Three schools were chosen from the 30 schools in Abha by Lottery method, and then from these schools, all 2nd and 3rd level students were recruited for the study. The Menstrual Disorder of Teenagers Questionnaire was used. The questionnaire has five parts which included, information about usual periods, associated symptoms with menstruation during previous 12 months, effect of the periods affect on lifestyle, habits with the period and family history.

Results: The study included 228 female students. Slightly less than half of them (47.4%) aged between 17 and 18 years whereas 13.1% of them aged over 18 years. The age of menarche ranged between 13 and 16 years among more than half of them (54.4%) while it ranged between 9 and 12 years among 40.4% of them with a mean of 13.8±1.2 years. Regular menses were reported by 50.9% of the girls. A cycle length ranging from 21 to 35 days for 94.8%. Heavy bleeding was reported by 38.6% of the girls. Students with age of menarche less than 9 years or more than 16 years had menses irregularity rate more than those with age of menarche ranged between 9 and 16 years. Students who never practices physical activities had higher significant rate of menses irregularity and painful cycles. Dysmenorrheal cycles were reported by most students (75.4%).

Conclusion: Menstrual disorders such as irregular cycles, dysmenorrhea and heavy bleeding with blood clots are relatively common problems among secondary school students in Abha.

Keywords: Dysmenorrheal, Menstrual Disorders, Self-Management, Secondary Schools.

*Correspondence to:
Dr. Samah H. Al-Rehaili, SBFM
Family Medicine Senior Registrar,
Alsenaya`a Primary Health Care Center,
Ministry of Health, Assir Region, KSA.

Access this article online	
Website: www.ijmrp.com	**Quick Response code**
DOI: 10.21276/ijmrp.2017.3.5.021	

INTRODUCTION

Although, the onset of menstruation is unique to females, menstrual disorders are common.[1]

Deep-rooted traditions do not allow adolescent girls to realise their rights in many parts of the world. Existing National Health Programs have failed to address issues related to adolescent girls who do not find ways to express themselves, lacking access to education and health care. Although menstrual irregularity can be normal during the first few years after menarche, other menstrual signs and symptoms such as amenorrhea, excessive uterine bleeding, dysmenorrheal, and premenstrual syndrome may indicate a pathological condition which requires prompt attention and referral.[2]

The normal menstrual cycle relies on action and interaction of hormone released from hypothalamus-pituitary and ovaries and their effect on the endometrium. The normal menstrual pattern is such that age of menarche is less than 16 years, length of menstrual cycle 24-32 days, length of flow 3-7 days and amount of flow ≤80 ml.[3]

Menstruation is a periodic and cyclical shedding of progestational endometrium accompanied by loss of blood. This peculiar is only present in women and in higher apes.[4]

The menstrual cycle as an additional vital sign adds a powerful tool to the assessment of normal development and the exclusion of pathological conditions. Menstrual cycles are irregular during the first year of menarche due to anovulatory cycles. Height, weight and body fat content continue to increase for 1–2 years following menarche and the cycles become regular within 2–3 years.[5]

Typically a menstrual flow lasts 2–7 days in 70–80% of cases, and changing three to five pads per day suggests normal flow. The duration between two menstrual cycles ranges from 21 to 45 days in the 1–2 years after menarche. When ovulatory cycles begin 60–80% of the cycles are 21–35 days long, which is a similar pattern to that in adults.[6]

Some variety of menstrual dysfunction occurs in approximately 75% of adolescent girls, and may affect the life of adolescent and young adult women.[7]

The most common menstrual disorders were irregular frequency of menstruation (80.7%), premenstrual syndrome (54.0%), and irregular duration of menstruation (43.8%), dysmenorrhoea (38.1%), polymenorrhoea (37.5%) and oligomenorrhoea (19.3%).[8]

Dysmenorrhea is one of the most common gynecologic disorders among adolescent girls. It is defined as pelvic pain directly related to menstruation, and is associated with symptoms ranging from headache and back pain to nausea, vomiting and diarrhea. It is classified into two categories: primary when pelvic examination and ovulatory function are normal; and secondary when there is an identifiable gynecological pathology. Primary dysmenorrhea characteristically begins when adolescents attain their ovulatory cycles; generally within the first year after menarche.[9]

The main aim of the present study is to assess the normal menstrual pattern and prevalence of menstrual disorder among secondary school students.

SUBJECTS AND METHODS

It is a cross sectional study included a representative random sample of female students of secondary schools in Abha city, which is a city in Assir Province of Saudi Arabia on the slopes of the Sarawat Mountains (Al-Sarawat Mountains). In Abha there are 30 female secondary school and 5420 students.

Using the Roasoft online sample size calculator, the sample size was calculate on assumption that the total population of female secondary school students is 5420, the lowest prevalence of menstrual disorders is 19.3%[8], 95% confidence interval and 5% acceptable errors, the sample was 230, this sample was increased to 250 to compensated for non-response. Three schools were chosen from the 30 schools by Lottery methods then from these schools, all 2nd and 3rd level students were recruited for the study. A self-administered questionnaire was given to all selected students.

The (Menstrual Disorder of Teenagers) Questionnaire was used.[10]

The questionnaire is divided into five parts: information about usual periods, associated symptoms with menstruation during previous 12 months, effect of the periods affect on lifestyle, habits with the period and family history.

The researcher distributed the self-administered questionnaire to the target population either by direct contact with target population or through directors and heads of schools by turn they I distributed the questionnaires to their student during the working hours. Care was taken to not disturb the student classes. The researcher was available to clarify any issue and the questionnaires were collected after 4-6 weeks. The data were verified by hand then coded and entered to a personal computer. Thanks and appreciations were used to encourage the participants to be involved in the study.

The questionnaire was exposed to a pilot study in 2013 using a small group of experts. This pilot was to determine the level of understanding, any language or phrase difficulties, comprehension and length of time to complete the questionnaire. The researchers talk to all the respondents after they answered the questionnaire, and they verified that the language of the questionnaire is readable and easy to comprehend. The pilot administration individuals were not included into the main study.

A permission from Joint Program of Family Medicine to conduct the research was obtained as well as individual consent was filled by participants in the questionnaire.

Statistical Design

The data were collected and verified by hand then coded before computerized data entry. The statistical Package for Social Sciences (SPSS) software version 22.0 was used for data entry and analysis. Descriptive statistics (e.g. number, percentage, mean, range, standard deviation) and analytic statistics using chi-square test (χ^2) were applied. Severity of the pain was categorized into mils, moderate and severe based on the quartiles of the pain scale (below 1st: mild; 2nd-3rd: moderate; above 3rd: severe). P-values ≤0.05 was considered as statistically significant.

RESULTS

Out of 250 female students invited to participate, 228 responded. Thus, a response rate of 91.2% has been obtained. The study included 228 female students. Table 1 summarizes their general information. Slightly less than half of them (47.4%) aged between 17 and 18 years whereas 13.1% of them aged over 18 years. Family size ranged between 7 and 9 persons among more than half of them (54.4%). More than a third of their mothers (39.5%) were at least university graduated whereas 64.1% of their fathers were at least university graduated. Their birth order was more than second among almost half of them (49.1%). Fifty percent of the family had average monthly income.

Only 4% of the students claimed they practiced physical activities on regular basis where as 36.9% of them practiced them irregularly. Almost half of the students (49.1%) never practiced any physical activity.

Typical menstrual bleeding patterns for the sample are summarized in table 2. The age of menarche ranged between 13 and 16 years among more than half of them (54.4%) while it ranged between 9 and 12 years among 40.4% of them with a mean age of 13.8±1.2 years. Regular menses were reported by 50.9% of the students (n = 116) of girls. A cycle length ranging from 21 to 35 days for 94.8% (n = 220/228). Blood clots with menstrual bleeding were reported by 38.6% of the sample.

Table 3 presents factors that could associated with irregularity of menses among students girls in Abha. Maternal education was significantly associated with menses irregularity as 61.5 of students whose mothers were illiterate compared to 32.2% of those whose mothers were university graduated had irregular cycles. This difference was statistically significant, p=0.001. Students of the second birth order reported the highest rate of menses irregularity while those of the last birth order reported the lowest rate (70% versus 32.4%, p=0.023). Students with age of menarche less than 9 years or more than 16 years had menses irregularity rate more than those with age of menarche ranged between 9 and 16 years. The lowest rate was reported among students whose age of menarche ranged between 9 and 12 years (39.1%). The difference was statistically significant, p=0.003. Students who never practices physical activities had higher

significant rate of menses irregularity compared to those who practiced physical activities on regular basis (56% versus 18.8%, p=0.003). Table 4 presents the factors associated with presence of menstrual blood clots among female secondary school girls in Abha. Only 20% of students in the age group 15-16 compared to 51.9% and 46.7% among those in the age groups 17-18 and over 18 reported menstrual blood clots. This difference was statistically significant, p<0.001. Almost a quarter of students of the last birth order (26.5) compared to 56.7% of those of the second birth and 46.2% of those in the first birth order had menstrual blood clots, p=0.036. Students with age of menarche less than 9 years had menses blood clots less than those with age of menarche over 16 years (25% versus 100%). The difference was statistically

significant, p=0.003. More than half of students with irregular cycles (52.9%) compared to 28.2% and 18.8% of those whose cycles were 29-35 and over 35 days, respectively had menstrual blood clots. The difference was statistically significant, p=0.001.

History of school absenteeism was reported by 53.5% of them in some cycles whereas 7% of the students reported school absenteeism every cycle. In more than half of cases (57.2%), it was only one day whereas it was more than two days among 10.1% of students who reported school absenteeism because of menses. Regarding causes of school absenteeism, severe pain was the most frequent reported cause by most of students (85.5%), followed by nausea (29%) and massive bleeding (18.8%).

Table 1: General information of the participants (n=228).

	Categories	Number	Percentage
Age (years	15-16	90	39.5
	17-18	108	47.4
	>18	30	13.1
Family size	4-6	58	25.4
	7-9	124	54.4
	>9	46	20.2
Maternal education	Illiterate	26	11.4
	Primary	40	17.5
	Intermediate	24	10.5
	Secondary	48	21.1
	University	90	39.5
Paternal education	Illiterate	10	4.4
	Primary	16	7.0
	Intermediate	24	10.5
	Secondary	32	14.0
	University	146	64.1
Birth order	First	52	22.8
	Second	30	13.2
	>second	112	49.1
	Last	34	14.9
Income	Low	10	4.4
	Average	114	50.0
	High	104	45.6

Table 2: Menstrual history of the participants (n=228).

		Number	Percentage
Age of menarche (years)	<9	4	1.8
	9-12	92	40.4
	13-16	124	54.4
	>16	8	3.5
	Mean±SD	13.8±1.2	
Regularity of the cycle	Regular	116	50.9
	Irregular	104	45.6
	Don`t know	8	3.5
Cycle duration in days	21-28	78	67.2
(for regular cycles)	29-35	32	27.6
	>35	6	5.2
Blood clots	Yes	88	38.6
	No	140	61.4

Table 3: Factors associated with irregular cycles among female secondary students, Abha.

		Irregular menstrual cycle			X^2 (p-value)
		No N=116 N (%)	Yes N=104 N (%)	Don`t know N=8 N (%)	
Age (years)	15-16 (n=90)	50 (55.6)	36 (40.0)	4 (4.4)	3.24
	17-18 (n=108)	50 (46.3)	54 (50.0)	4 (3.7)	(0.518)
	>18 (n=30)	16 (53.3)	14 (46.7)	0 (0.0)	
Family size	4-6 (n=58)	36 (62.1)	19 (32.8)	3 (5.2)	7.28
	7-9 (n=124)	62 (50.0)	58 (46.8)	4 (3.2)	(0.122)
	>9 (n=46)	18 (39.1)	27 (58.7)	1 (2.2)	
Maternal education	Illiterate (n=26)	10 (38.5)	16 (61.5)	0 (0.0)	26.75
	Primary (n=40)	18 (45.0)	22 (55.0)	0 (0.0)	(0.001)
	Intermediate (n=24)	8 (33.3)	12 (50.0)	4 (16.7)	
	Secondary (n=48)	22 (45.8)	25 (52.1)	1 (2.1)	
	University (n=90)	58 (64.4)	29 (32.2)	3 (3.3)	
Paternal education	Illiterate (n=10)	2 (20.0)	8 (80.0)	0 (0.0)	10.20
	Primary (n=16)	10 (62.5)	6 (37.5)	0 (0.0)	(0.251)
	Intermediate (n=24)	14 (58.3)	10 (41.7)	0 (0.0)	
	Secondary (n=32)	16 (50.0)	16 (50.0)	0 (0.0)	
	University (n=146)	74 (50.7)	64 (43.8)	8 (5.3)	
Birth order	First (n=52)	24 (46.2)	26 (50.0)	2 (3.8)	14.62
	Second (n=30)	8 (26.7)	21 (70.0)	1 (3.3)	(0.023)
	Intermediate (n=112)	64 (57.1)	46 (41.1)	2 (1.8)	
	Last (n=34)	20 (58.8)	11 (32.4)	3 (8.8)	
Income	Low (n=10)	4 (40.0)	6 (60.0)	0 (0.0)	1.14
	Average (n=114)	58 (50.9)	52 (45.6)	4 (3.5)	(0.888)
	High (n=104)	54 (51.9)	46 (44.2)	4 (3.8)	
Age of menarche	<9 (n=4)	0 (0.0)	3 (75.0)	1 (25.0)	20.14
	9-12 (n=92)	54 (58.7)	36 (39.1)	2 (2.2)	(0.003)
	13-16 (n=124)	62 (50.0)	57 (46.0)	5 (4.0)	
	>16 (n=8)	0 (0.0)	8 (100)	0 (0.0)	
Physical activity	Regular (n=32)	26 (81.3)	6 (18.8)	0 (0.0)	16.05
	Irregular (n=112)	56 (50.0)	51 (45.5)	5 (4.5)	(0.003)
	Never (n=84)	34 (40.5)	47 (56.0)	3 (3.5)	

Painful menstrual cycles were reported by most students (75.4%). Based on quartiles of the pain scale, mild, moderate and severe pains were reported by 22.4%, 26.3% and 26.8% of the students, respectively. (Figure 1)

Severe pain during menstruation was reported among 21% of students whose age of menarche ranged between 13 and 16 years compared to 75% among those whose age of menarche was less than 9 years, p=0.024. More than a third of students who practiced physical activity regularly (37.5%) compared to 11.9% among those who never practiced physical activity had no painful menstrual cycles, p=0.002. All students whose cycle lasted over 35 days had severe pain compared to only 23.1% and 12.5% od those whose cucles lasted between 21-28 days and 29-35 days, respectively. This difference was statistically significant, p=0.004 (table 5). Out of 172 students reported painful menstrual cycles, 122 (70.9%) reported history of pain killer intake to relieve the pain as shoen in figure 6. Out of them (n=122), brufen (42.6%) and panadol (36.1%) were the most reported taken pain killers.

The most frequent symptoms reported only before the cycle were low back pain (16.7%), bloating (14%), depression (10.5%) and pelvic pain (9.6%). The most common reported symptoms during the cycle were low back pain (42.1%), pelvic pain (34.2%), depression (28.9%), appetite change (28.9%), bloating (21.1%) and anorexia (20.2%). The commonest symptoms reported any time during the month were extra-vaginal pain (19.3%), appetite change (7.9%), vomiting (7.9%) and vaginal itching (7%). Appetite change (14%), headache (10.5%), bloating (9.6%) and low back pain (9.6%) were reported all the time. When students were asked to rate, on a 0-10 scale, the impact posed by menstrual cycles on some of selected life activities, an overall median value of 2 was reported for attending schools and sports and exercise indicating mild impact on these two life activities whereas an overall median value of zero was reported with the other activities indicating apparently no impact. When they were asked to rate, on a 0-10 scale, the impact posed by different menstrual symptoms on the life, the highest impact was observed with changing mood (median=9), followed by exhaustion (median=7.5), sickness and tiredness (median=7.5), pain (median=6) and finally bleeding (median=2.5). Regarding the frequency, 29.8% of the students claimed that these symptoms occur every cycle whereas 33.3% and 36.8% of them claimed that they occur in most or some cycles, respectively. From figure 2, it is evident that almost a quarter of female students were aware of each of the common gynecological problems associated with menstrual cycles as 28.1% of them were aware of endometriosis whereas 26.3% and 25.4% of them were aware of polycystic ovary syndrome and

pelvic inflammatory disease, respectively. More than half of the students particpated in the study reported family history (among their mothers and/or sisters) of severe menstrual pain and 47.4%

of them had family history of menstrual problems. Family history of pelvic inflammatory disease, endometriosis ans polycytic ovary syndrome were reported by 4.4%, 4.4% and 3.5% of them.

Table 4: Factors associated with menstrual blood clots among female secondary students, Abha.

		Menstrual blood clots		χ^2 (p-value)
		No N=140 N (%)	Yes N=88 N (%)	
Age (years)	15-16 (n=90)	72 (80.0)	18 (20.0)	21.96
	17-18 (n=108)	52 (48.1)	56 (51.9)	(<0.001)
	>18 (n=30)	16 (53.3)	14 (46.7)	
Family size	4-6 (n=58)	35 (60.3)	23 (39.7)	0.06
	7-9 (n=124)	77 (62.1)	47 (37.9)	(0.971)
	>9 (n=46)	28 (60.9)	18 (39.1)	
Maternal education	Illiterate (n=26)	16 (61.5)	10 (38.5)	0.33
	Primary (n=40)	26 (65.0)	14 (35.0)	(0.988)
	Intermediate (n=24)	15 (62.5)	9 (37.5)	
	Secondary (n=48)	29 (60.4)	19 (39.6)	
	University (n=90)	54 (60.0)	36 (40.0)	
Paternal education	Illiterate (n=10)	8 (80.0)	2 (20.0)	6.12
	Primary (n=16)	6 (37.5)	10 (62.5)	(0.191)
	Intermediate (n=24)	16 (66.7)	8 (33.3)	
	Secondary (n=32)	18 (56.3)	14 (43.8)	
	University (n=146)	92 (63.0)	54 (37.0)	
Birth order	First (n=52)	28 (53.8)	24 (46.2)	8.53
	Second (n=30)	13 (43.3)	17 (56.7)	(0.036)
	Intermediate (n=112)	74 (66.1)	38 (33.9)	
	Last (n=34)	25 (73.5)	9 (26.5)	
Income	Low (n=10)	6 (60.0)	4 (40.0)	1.30
	Average (n=114)	66 (57.9)	48 (42.1)	(0.523)
	High (n=104)	68 (65.4)	36 (34.6)	
Age of menarche	<9 (n=4)	3 (75.0)	1 (25.0)	13.85
	9-12 (n=92)	56 (60.9)	36 (39.1)	(0.003)
	13-16 (n=124)	81 (65.3)	43 (34.7)	
	>16 (n=8)	0 (0.0)	8 (100)	
Physical activity	Regular (n=32)	20 (62.5)	12 (37.5)	0.05
	Irregular (n=112)	68 (60.7)	44 (39.3)	(0.976)
	Never (n=84)	52 (61.9)	32 (38.1)	
Cycle duration	Irregular (n=104)	49 (47.1)	55 (52.9)	17.91
	21-28 days (n=78)	5 (62.5)	3 (37.5)	(0.001)
	29-35 days (n=32)	56 (71.8)	22 (28.2)	
	>35 days (n=6)	26 (81.2)	6 (18.8)	
	Don`t know (n=8)	4 (66.7)	2 (33.3)	
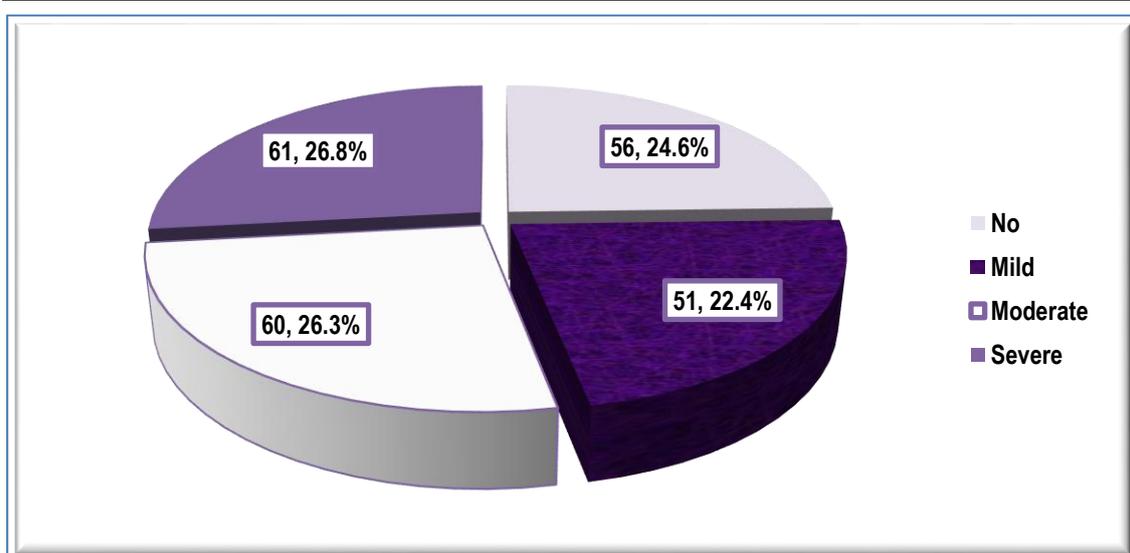
Figure 1: Pain severity of menstrual cycles during the last 6 months among secondary school girls.

Table 5: Factors associated with painful cycles among female secondary students, Abha.

|		Pain during menstrual cycles				χ^2
		No N=56 N (%)	Mild N=51 N (%)	Moderate N=60 N (%)	Severe N=61 N (%)	(p-value)
Age (years)	15-16 (n=90)	24 (26.7)	19 (21.1)	32 (35.6)	15 (16.7)	11.22
	17-18 (n=108)	26 (24.1)	24 (22.2)	22 (20.4)	36 (33.3)	(0.082)
	>18 (n=30)	6 (20.0)	8 (26.7)	6 (20.0)	10 (33.3)	
Family size	4-6 (n=58)	10 (17.2)	12 (20.7)	20 (34.5)	16 (27.6)	4.95
	7-9 (n=124)	36 (29.0)	27 (21.8)	28 (22.6)	33 (26.6)	(0.550)
	>9 (n=46)	10 (21.7)	12 (26.1)	12 (26.1)	12 (26.1)	
Maternal education	Illiterate (n=26)	6 (23.1)	6 (23.1)	8 (30.7)	6 (23.1)	10.17
	Primary (n=40)	6 (15.0)	8 (20.0)	14 (35.0)	12 (30.0)	(0.601)
	Intermediate (n=24)	8 (33.3)	7 (29.2)	2 (8.3)	7 (29.2)	
	Secondary (n=48)	16 (33.3)	8 (16.7)	12 (25.0)	12 (25.0)	
	University (n=90)	20 (22.2)	22 (24.4)	24 (26.7)	24 (26.7)	
Paternal education	Illiterate (n=10)	2 (20.0)	0 (0.0)	4 (40.0)	4 (40.0)	20.04
	Primary (n=16)	4 (25.0)	2 (12.5)	6 (37.5)	4 (25.0)	(0.066)
	Intermediate (n=24)	8 (33.3)	2 (8.3)	6 (25.0)	8 (33.3)	
	Secondary (n=32)	4 (12.5)	4 (12.5)	12 (37.5)	12 (37.5)	
	University (n=146)	38 (26.0)	43 (29.5)	32 (21.9)	33 (22.6)	
Birth order	First (n=52)	18 (34.6)	10 (19.2)	14 (26.9)	10 (19.2)	16.44
	Second (n=30)	6 (20.0)	8 (26.7)	4 (13.3)	12 (40.0)	(0.058)
	Intermediate (n=112)	26 (23.2)	28 (25.0)	26 (23.2)	32 (28.6)	
	Last (n=34)	6 (17.6)	5 (14.7)	16 (47.1)	7 (20.6)	
Income	Low (n=10)	4 (40.0)	0 (0.0)	6 (60.0)	0 (0.0)	11.92
	Average (n=114)	30 (26.3)	25 (21.9)	26 (22.8)	33 (28.9)	(0.064)
	High (n=104)	22 (21.2)	26 (25.0)	28 (26.9)	28 (26.9)	
Age of menarche	<9 (n=4)	0 (0.0)	1 (25.0)	0 (0.0)	3 (75.0)	19.13
	9-12 (n=92)	16 (17.4)	24 (26.1)	24 (26.1)	28 (30.4)	(0.024)
	13-16 (n=124)	36 (29.0)	26 (21.0)	36 (29.0)	26 (21.0)	
	>16 (n=8)	4 (50.0)	0 (0.0)	0 (0.0)	4 (50.0)	
Physical activity	Regular (n=32)	12 (37.5)	6 (18.8)	4 (12.5)	10 (31.3)	20.79
	Irregular (n=112)	34 (30.4)	19 (17.0)	36 (32.1)	23 (20.5)	(0.002)
	Never (n=84)	10 (11.9)	26 (31.0)	20 (23.8)	28 (33.3)	
Cycle duration	Irregular (n=104)	28 (26.9)	25 (24.0)	21 (20.2)	30 (28.8)	29.19
	21-28 days (n=78)	18 (23.1)	14 (17.9)	28 (35.9)	18 (23.1)	(0.004)
	29-35 days (n=32)	10 (31.3)	10 (31.3)	8 (25.0)	4 (12.5)	
	>35 days (n=6)	0 (0.0)	0 (0.0)	0 (0.0)	6 (100)	
	Don`t know (n=8)	0 (0.0)	2 (25.0)	3 (37.5)	3 (37.5)	
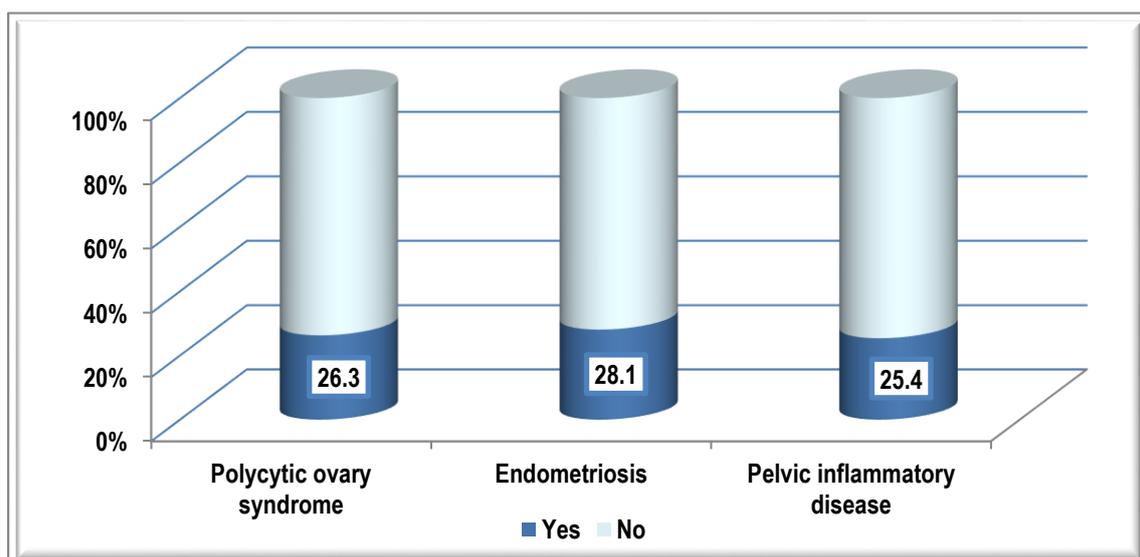
Figure 2: Awareness of female students about common gynecological health problem associated with menses.

DISCUSSION

Although adolescence is a healthy period of life, this phase brings forth another dimension of health, i.e. reproductive health, about which most of the adolescents are not concerned. Menstrual health, which is one of the major areas of concern in reproductive health, affects a large number of women throughout their reproductive life from adolescence. Moreover, menstrual disorders and improper hygienic care have direct consequences in fertility and reproductive tract infections, respectively. The 1994 International Conference on Population and Development held in Cairo recommended that governments should focus more attention on their adolescents through an integrated approach to their health, education and social needs.[11]

The present study was conducted to explore the variations in menstrual characteristics among the secondary school adolescents in Abha and to find out the predictor variables (socioeconomic and other menstrual variables) for a particular menstrual outcome.

Age of menarche in the present study did not vary much from that of other studies[1,12-14] as it is ranged between 9 and16 years among vast majority of school girls. However, in this study, reporting of age of menarche was only to the nearest year (month was not reported).

A "long cycle" (longer than 35 days) was a not a common menstrual disorder among the adolescents in our study. In the WHO study on menstrual and ovulatory patterns in adolescent girls, the mean menstrual cycle length was 50.7 days in the first cycle after menarche, and bleeding lasted for an average of 4.7 days.[15] The female reproductive system usually requires approximately two years maturing before adolescent girls will have consistently-regular ovulatory cycles.[15]

Heavy menstrual bleeding, evidenced by blood clots was a common problem among the adolescents in this study reported by almost a third of students. The most common cause of heavy menstrual bleeding in adolescents is dysfunctional uterine bleeding related to anovulation.[16] However, in the present study, we did not investigate bleeding disorders among female students.

Our study describes pain in 75.4% of respondents, which is lower than the 80% reported by Hillen et al. from a sample of 388 West Australian teenagers 10 years ago,[17] and 93% reported in (MDOT) study.[10] However, it is close to the lower value in the range 70–91% commonly reported.[5,18-20]

The MDOT study has shown a change in the use of NSAIDs for pain relief within the last decade.[10] In 1999, Hillen et al.[17] reported 53% using simple analgesics and 42% using NSAIDs, in our study reporting 42.6 and 36.1% our subjects used Brufen and Panadol, respectively. This study did not investigate effectiveness of pain medication as well as we did not examine whether pain medication was used in therapeutic doses.

The problem of absenteeism from school was under-appreciated. This study reported that about 7% of the adolescents had symptoms which were severe enough for them every cycle to be absent from school whereas more than 50% reported school absenteeism in some cycles. In several studies of young women, rates of absenteeism ranged from 34% to 50%.[21-23]

Other studies showed that up to 52% of female adolescents in their study reported that their ability to perform work was affected.[17,22,23] Surveys among female high school adolescents showed that the majority of the female adolescents identified dysmenorrhoea as problems that significantly affected their academic performance and were responsible for school absenteeism.[1,23] In the present survey, the commonest cause of school absenteeism reported by students was severe pain. As dysmenorrhoea reportedly affects school performance and attendance, school administrators may have a vested interest in providing health education on this topic to students. With adequate support from parents, schools and healthcare personnel, the problem of loss of invaluable school time can be prevented.

In the past two decades, the relation between physical activity and menstrual disorders including primary dysmenorrheal and menstrual irregularity has significantly been studied. Research findings have indicated that exercise can affect menstruation in many ways including inducing amenorrhea in athletes and it may decrease symptoms of premenstrual syndrome and dysmenorrheal.[24]

In agreement to what has been observed in the present study, some researchers suggested that performing regular physical activity reduced the primary dysmenorrhea symptoms and/or menstrual irregularity.[25,26] In the present study, practicing regular physical activity was significantly associated with regular and painless menstrual cycles whereas it was not significantly associated with bleeding severity. As a factor it has been accepted that in developing countries such as KSA, participating in regular physical activity programs are limited by social, cultural and religious factors Therefore, because of high potential benefits of physical activity and exercise in reducing the detrimental effects of primary dysmenorrhea symptoms and menstrual irregularity, young girls are recommended to take part in such physical activity programs in order to help them to decrease the negative impact of these symptoms on their academic, social and even personal life.

One of the limitations of the study was that the data were only collected in schools. School-age female adolescents who had left school or dropped out of school at various ages could not be reached, so the results cannot be generalized to all female adolescents nationwide. In addition, an important limitation of all cross-sectional studies is that they can suggest associations, but not prove causality.

In conclusion, menstrual disorders such as irregular cycles, dysmenorrhea and heavy bleeding evidenced by presence of blood clots are relatively common problems among secondary school students in Abha. We recommended health education on menstrual problems targeting female adolescents and their parents, and routine screening for menstrual problems by healthcare providers, which can help prevent the loss of invaluable school time.

ACKNOWLEDGEMENTS

REFERENCES

1. Lee LK, Chen PCY, Lee KK, Kaur J. Menstruation among adolescent girls in Malaysia: a cross-sectional school survey. Singapore Med J 2006; 47(10): 869-874.

2. McEvoy M, Chang J, Coupey SM. Common menstrual disorders in adolescence: nursing interventions. MCN Am J Matern Child Nusr 2004; 29:41-9.

3. Houston AM, Abraham A, Huang Z, D'Angelo LJ. Knowledge, attitudes, and consequences of menstrual health in urban adolescent females. J Pediatr Adolescent Gynecology 2006; 19:271-5.

4. Batta N. Menstruation and other cyclical phenomena. In Jeffcoates Principles of Gynaecology.6th international ed. Arnold 2001; 81-86: 88-99.

5. Klein JR, Litt IF. Epidemiology of adolescent dysmenorrhea. Pediatrics 1981; 68: 661–4.

6. Hickey M, Balen A. Menstrual disorders in adolescence: Investigation and management. Hum. Reprod. Update 2003; 9: 493–504.

7. Ziv A, Boulet JR, Slap GB. Utilization of physician offices by adolescents in the United States. Pediatrics 1999; 104: 35– 42.

8. Karout N, Hawai SM, Altuwaijri S. Prevalence and pattern of menstrual disorders among Lebanese nursing students. EMHJ 2012; 18(4):346-52

9. Durain D. Primary dysmenorrhea: Assessment and management update.J Midwifery Womens Health2004;49:520–28.

10. Parker MA, Sneddon AE, Arbon P. The menstrual disorder of teenagers (MDOT) study: determining typical menstrual patterns and menstrual disturbance in a large population-based study of Australian teenagers. BJOG 2010 Jan; 117(2):185-192.

11. United Nations. Report of the International Conference on Population and Development, Cairo, 5-13 September 1994. New York: United Nations, 1995.

12. Hesketh T, Ding QJ, Tomkins A. Growth status and menarche in urban and rural China. Ann Hum Biol 2002; 29:348-52.

13. Fakeye O, Adegoke A. The characteristics of the menstrual cycle in Nigerian schoolgirls and the implications for school health programmes. Afr J Med Sci 1994; 23:13-7.

14. Ayatollahi SM, Dowlatabadi E, Ayatollahi SA. Age at menarche in Iran. Ann Hum Biol 2002; 29:355-62.

15. World Health Organization Task Force on Adolescent Reproductive Health. World Health Organization multicenter study on menstrual and ovulatory patterns in adolescent girls. II. Longitudinal study of menstrual patterns in the early postmenarcheal period, duration of bleeding episodes and menstrual cycles. J Adolescent Health 1986; 7:236-44.

16. McEvoy M, Chang J, Coupey SM. Common menstrual disorders in adolescence: nursing interventions. MCN Am J Matern Child Nurs 2004; 29:41-9.

17. Hillen TI, Grbavac SL, Johnston PJ, Straton JA, Keogh JM. Primary dysmenorrhea in young Western Australian women:

prevalence, impact, and knowledge of treatment. J Adolescent Health 1999; 25:40–5.

18. Johnson J. Level of knowledge among adolescent girls regarding effective treatment for dysmenorrhea. J Adolescent Health Care1988; 9:398–412.

19. Wilson CA, Keye WR. A survey of adolescent dysmenorrhea and premenstrual symptom frequency: a model program for prevention, detection, and treatment. J Adolescent Health Care 1989; 10:317–22.

20. Banikarum C, Chako MR, Kelder SH. Prevalence and impact of dysmenorrhoea on Hispanic female adolescents. Arch Pediatr Adolescent 2000; 154:1226–9.

21. Andersch B, Milsom I. An epidemiologic study of young women with dysmenorrhoea. Am J Obstetric Gynecology 1982; 144:655-60.

22. Sundell G, Milsom I, Andersch B. Factors influencing the prevalence and severity of dysmenorrhoea in young women. Br J Obstetric Gynicology 1996; 97:588-94.

23. Banikarim C, Chacko MR, Kelder SH. Prevalence and impact of dysmenorrhoea on Hispanic female adolescents. Arch Pediatr Adolescent Med 2000; 154:1226-9.

24. Warren, M.P. and J. Locke Rebecca. What is the effect of exercise on primary dysmenorrheal? WJSM 1999;33: 227.

25. Sternfeld B, Jacobs MK, Quesenberry Jr CP, Gold EB, Sowers M. Physical Activity and Menstrual Cycle Characteristics in Two Prospective Cohorts American Journal of Epidemiology 2002;156(5):402-409.

26. Mahvash N, Eidy A, Mehdi K, Zahra MT, Mani M, Shahla H. The effect of physical activity on primary dysmenorrhea of Female University Students. World Applied Sciences Journal 17 (10): 1246-1252, 2012.