

# Epidemiology of dysmenorrhoea among adolescent students in Mansoura, Egypt

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وبائيات عسر الطمث بين الطالبات في سن المراهقة في المنصورة، مصر  
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**الخلاصة:** استهدفت هذه الدراسة تقصي انتشار عسر الطمث، ومحدداته، وأثره، وممارسات معالجته. وتم في إطار هذه الدراسة دراسة 664 طالبة في المدارس الثانوية في المناطق الريفية والحضرية. وتم جمع المعطيات من خلال استبيان ذاتي الاستكمال. ودلت النتائج على معاناة 75% من الطالبات من عسر الطمث (55.3% من عسر الطمث الخفيف، و30% من عسر الطمث المتوسط، و14.8% من عسر الطمث الشديد). ولم يلتبس معظم الطالبات النصائح الطبية، وقامت 34.7% بمعالجة أنفسهن بأنفسهن. وشملت الأعراض الأكثر شيوعاً المرتبطة بعسر الطمث: التعب، والصداع، وآلام الظهر، والدوخة. وأبلغ 47.4% من الطالبات المصابات بعسر الطمث عن عدم تأثر أنشطتهن من جراء هذه الحالة، ولكن زادت هذه النسبة زيادة كبيرة بين المصابات بعسر الطمث الشديد. وشملت العوامل الرئيسية المنبئة بحدوث عسر الطمث: كبر السن نسبياً، وعدم انتظام الطمث أو طول مدته، وشدة النزف.

**ABSTRACT** To examine the prevalence, determinants, impact and treatment practices of dysmenorrhoea, we studied 664 female students in secondary schools in urban and rural areas. Data was collected through a self-administered questionnaire. About 75% of the students experienced dysmenorrhoea (mild 55.3%, moderate 30.0%, severe 14.8%). Most did not seek medical advice although 34.7% treated themselves. Fatigue, headache, backache and dizziness were the commonest associated symptoms. No limitation of activities was reported by 47.4% of student with dysmenorrhoea, but this was significantly more reported by students with severe dysmenorrhoea. Significant predictors of dysmenorrhoea were older age, irregular or long cycle and heavy bleeding.

## Épidémiologie de la dysménorrhée chez des élèves adolescentes à Mansoura (Égypte)

**RÉSUMÉ** Pour examiner la prévalence, les déterminants, l'impact et les pratiques de traitement de la dysménorrhée, nous avons mené une étude auprès de 664 élèves d'écoles secondaires en zone urbaine et rurale. Des données ont été recueillies à l'aide d'un auto-questionnaire. Environ 75 % des élèves ont eu une dysménorrhée (légère 55,3 %, modérée 30,0 %, sévère 14,8 %). La plupart d'entre elles n'ont pas recherché un avis médical bien que 34,7 % se soient soignées elles-mêmes. Fatigue, céphalées, dorsalgies et vertiges étaient les symptômes les plus courants qui y étaient associés. Aucune limitation des activités n'a été rapportée par 47,4 % des élèves souffrant de dysménorrhée, mais ce point était signalé significativement plus souvent par les élèves souffrant de dysménorrhée sévère. Les facteurs prédictifs de la dysménorrhée étaient l'âge plus avancé, un cycle menstruel irrégulier ou long et des menstrues abondantes.

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## Introduction

Dysmenorrhoea, or painful menstruation, is defined as a severe, painful cramping sensation in the lower abdomen [1]. It may be accompanied by headache, dizziness, diarrhoea, a bloated feeling, nausea and vomiting, backache and leg pains. Primary dysmenorrhoea occurs in the absence of recognizable pelvic pathology and commonly begins when the ovulatory menstrual cycle starts. The pain starts a few hours before menstruation and lasts for up to 72 hours. It is usually most severe on the first day of menstruation and gradually diminishes. It is caused by increased endometrial prostaglandin production and almost always first occurs in women younger than 20 years [1–4].

Secondary dysmenorrhoea, on the other hand, is associated with pelvic conditions or pathology that cause pelvic pain in conjunction with the menses. This usually appears later in a woman's reproductive life and can occur with anovulatory cycles. It often lasts for 5 to 7 days each month, and progressively increases in severity [1–4].

Dysmenorrhoea has a negative effect on a woman's life. It may be so severe as to confine the woman to bed. During adolescence, dysmenorrhoea leads to high rates of absence from school and non-participation in activities. Mild to moderate cases can usually be treated by reassurance and paracetamol [1,2,5].

Population studies on dysmenorrhoea are scarce for Egyptian women, and practically non-existent for adolescent girls. In this study, therefore, we aimed to estimate the prevalence of dysmenorrhoea and to study its determinants and impact as well as treatment practices among adolescent students in Mansoura, Egypt.

## Methods

This study was carried out during the period November 2001–April 2002 in Mansoura district, Egypt. A cross-sectional survey was carried out. The target population was female secondary-school students enrolled in government schools. Approval of the local directorate of education was obtained. The eastern and western educational zones (municipal subdivisions of the city) as well as the rural sector were represented. Both general and technical secondary schools were represented. One general secondary school was randomly selected from each of the eastern and western zones (the number of schools is similar in each zone) as well as 1 school from the rural sector. One technical commercial school and 1 nursing school were selected from Mansoura city. All social strata as well as the urban and rural sectors of the community were represented in this distribution. From each selected school, 1 class (cluster) from each grade was randomly selected. A total of 15 classes were studied. A total of 694 students were registered in the chosen classes. Of these, 664 (95.7%) participated in the study. Others were either absent (3.6%) or refused to complete the questionnaire (0.7%).

In cooperation with the school authorities, female investigators spent about 45–60 minutes in each class. The students were briefed about the study, encouraged to participate and motivated to express their experiences. It was emphasized that all data collected were strictly confidential. Students were requested to complete a self-administered, anonymous questionnaire covering family background, age at menarche, duration and amount of bleeding, cycle length, pain during menstruation

(dysmenorrhoea) during the previous 3 months, severity of the pain (mild, moderate or severe, subjectively assessed), duration of pain, any associated symptoms, impact on daily activities and treatment taken, if any. Dysmenorrhoea was defined as lower abdominal pain associated with menstrual periods. The social score and family social class were calculated according to Fahmy and El-Sherbiny [6].

Data were analysed using SPSS, version 9. The chi-squared test was used as a test of significance. Factors significantly affecting prevalence of dysmenorrhoea on univariate analysis were entered into multivariate logistic regression analysis.  $P \leq 0.05$  was considered to be statistically significant.

## Results

The sociodemographic characteristics of the students in the study are shown in Table 1. The majority (96.7%) ever menstruated. The mean and median ages at menarche were 12.9 years and 13.0 years respectively. The vast majority of the students (98.0%) were Muslim. Just over half (53.2%) were from an urban residence.

The overall prevalence of dysmenorrhoea (assumed to be primary dysmenorrhoea, as secondary is rare at this age) was 74.6%; it was significantly more frequent among students from a rural residence, in those from low and very low social classes, those of older age, those who said they had an irregular cycle, those who stated they had heavy bleeding, those with long duration of bleeding ( $\geq 6$  days) and those with long cycles ( $\geq 30$  days) (Table 2).

On logistic regression analysis, the significant determinants of dysmenorrhoea were older age, cycle irregularity, heaviness of menstrual flow and longer cycle length (Table 3).

Table 1 Sociodemographic characteristics of secondary school students in Mansoura

Variable	No.	%
<i>Residence</i>		
Urban	353	53.2
Rural	311	46.8
<i>Family social class</i>		
High	175	26.4
Middle	124	18.7
Low & very low	365	55.0
<i>Religion</i>		
Muslim	651	98.0
Christian	13	2.0
<i>Age (years)<sup>a</sup></i>		
14	109	16.4
15	217	32.7
16	240	36.1
17+	98	14.8
<i>Ever menstruating</i>		
Yes	642	96.7
No	22	3.3
<i>Age at menarche (years)<sup>b,c</sup></i>		
< 12	47	7.1
12	178	26.8
13	244	36.7
14+	173	26.1
Total	664	100

<sup>a</sup>Range 14–18 years; mean 15.5 years (standard deviation 0.99).

<sup>b</sup>Range 10–16 years; median 13.0 years; mean 12.9 years (standard deviation 1.03).

<sup>c</sup>Among ever menstruating adolescents.

Dysmenorrhoea was mild in the majority of cases; only 14.8% of students with dysmenorrhoea reported having severe forms. In the majority of cases, the duration of the pain was less than 24 hours. The most frequent symptoms associated with dysmenorrhoea were fatigue, headache, backache, dizziness and anorexia/vomiting. In 23.8% of cases there were no associated symptoms. About half the students with dysmenorrhoea did not take any medica-

**Table 2 Prevalence and determinants of dysmenorrhoea among ever menstruating adolescents in Mansoura**

Variable	Total	Dysmenorrhoea		Significance test
		No.	%	
<i>Residence</i>				
Urban	335	233	69.6	$\chi^2 = 9.5; P = 0.002$
Rural	307	246	80.1	
<i>Family social class</i>				
High	163	107	65.6	$\chi^2 = 12.5; P = 0.002$
Middle	119	85	71.4	
Low & very low	360	287	79.7	
<i>Age (years)</i>				
14	97	60	61.9	$\chi^2 = 31.4; P < 0.001$
15	210	142	67.6	
16	237	187	78.9	
17+	98	90	91.8	
<i>Age at menarche (years)</i>				
< 12	47	38	80.9	$\chi^2 = 1.8; P = 0.6$
12	178	133	74.7	
13	244	184	75.4	
14+	173	124	71.7	
<i>Cycle regularity<sup>a</sup></i>				
Regular	429	298	69.5	$\chi^2 = 18.1; P < 0.001$
Irregular	213	181	85.0	
<i>Bleeding amount<sup>a</sup></i>				
Drops	28	11	39.3	$\chi^2 = 25.6; P < 0.001$
Average	503	373	74.2	
Heavy	111	95	85.6	
<i>Bleeding duration (days)</i>				
< 4	63	40	63.5	$\chi^2 = 6.8; P = 0.033$
4–5	400	296	74.0	
≥ 6	179	143	79.9	
<i>Cycle length (days)</i>				
< 30	245	166	67.8	$\chi^2 = 9.8; P = 0.002$
≥ 30	397	313	78.8	
Overall	642	479	74.6	

<sup>a</sup>Subjectively reported.

tion; the others reported using herbs/home remedies (36.7%) and analgesics/non-steroidal anti-inflammatory drugs (NSAIDs)/antispasmodics (34.7%) (Table 4). These drugs were mostly self-prescribed; only 13 students (2.7%) consulted a physician or pharmacist.

The impact of dysmenorrhoea on daily activities is shown in Table 5. No limitation was reported by 47.4% overall, but by only 2.8% of those who stated they had severe dysmenorrhoea. The activities the students reported as most often being limited were daily home chores (42.8%), going out of

**Table 3 Logistic regression analysis of factors affecting dysmenorrhoea among ever menstruating adolescent students (n = 642)**

Variable	$\beta$	P	OR	95% CI
<i>Age (years)</i>				
14 <sup>a</sup>	–		1	
15	0.28	0.3	1.32	0.78–2.23
16	0.78	0.005	2.18	1.27–3.72
17+	1.89	< 0.001	6.59	2.82–15.4
<i>Cycle regularity</i>				
Regular	–0.61	0.009	0.54	0.34–0.86
Irregular <sup>a</sup>	–		1	
<i>Menstrual flow</i>				
Drops <sup>a</sup>	–		1	
Average	1.31	0.002	3.71	1.63–8.47
Heavy	1.88	0.0002	6.54	2.47–17.29
<i>Cycle length (days)</i>				
<30 <sup>a</sup>	–		1	
≥30	0.39	0.048	1.48	1.00–2.19
<i>Constant</i>			–0.61	
<i>–2 log likelihood</i>			657.7	
<i>Model <math>\chi^2</math></i>			69.7; P < 0.001	

OR = odds ratio, CI = confidence interval.

<sup>a</sup>Reference group.

the home (41.5%), participation in social activities (39.0%) and participation in sports (34.4%). Limitations on activities were significantly more frequently reported among students who reported having severe dysmenorrhoea.

## Discussion

Over the past decade there has been a paradigm shift in the field of population studies, moving from a relatively singular focus on family planning to a broader focus on reproductive health. Menstrual problems are generally perceived as only minor health concerns and thus irrelevant to the public health agenda. Data on the frequency of menstrual dysfunction and its impact on

health status, quality of life and social integration among women in developing countries are scant. The lack of data and the private nature of menstruation perpetuate the belief that menstrual complaints do not warrant the attention of the public health community [7,8].

Dysmenorrhoea is the commonest gynaecologic disorder among female adolescents and is one of the commonest gynaecologic complaints in young women who present to doctors today [3,9,10]. Dysmenorrhoea among adolescents is usually of the primary type [1–4,11,12].

In our study, 74.8% of adolescent students reported pain with menstruation during the previous 3 months. This is comparable to previously reported preva-

**Table 4 Clinical presentation and treatment of dysmenorrhoea among ever menstruating adolescent students in Mansoura**

Characteristic	No.	%
<i>Severity</i>		
Mild	265	55.3
Moderate	143	30.0
Severe	71	14.8
<i>Duration of pain</i>		
< 24 hours	311	64.9
24–48 hours	127	26.5
> 48 hours	41	8.6
<i>Associated symptoms<sup>a</sup></i>		
None	114	23.8
Fatigue	339	70.8
Headache	297	62.0
Backache	272	56.8
Dizziness	144	30.1
Anorexia/vomiting	66	13.8
Abdominal distension/ bloating	39	8.1
Diarrhoea	18	3.8
<i>Treatment<sup>a</sup></i>		
None	237	49.5
Rest/relaxation	204	42.6
Herbs/home remedies	166	36.7
Analgesics/NSAIDs/ antispasmodics <sup>b</sup>	176	34.7
<i>Total</i>	479	74.6

<sup>a</sup>Categories are not mutually exclusive.

<sup>b</sup>Self-prescribed in 166 (97.3%).

NSAIDs = non-steroidal anti-inflammatory drugs.

lence in both industrialized and developing countries that ranged from 20% to 93% for the same age group [2,3,5,7,13–19]. The severity of dysmenorrhoea varied greatly. In our study 14.8% of adolescents with dysmenorrhoea reported their pain as severe. In other countries, severe dysmenorrhoea was reported by 15%–53% of adolescents [7,10,14,17,18,20]. These differences in the degree of pain severity may be related to cultural differences in pain

perception and variability in pain threshold. Correlation between ethnicity and pain perception has previously been reported [10].

Duration of pain was less than 24 hours in 64.9% of cases and only 8.6% of adolescents reported pain lasting for more than 48 hours. Banikarim, Chacko and Kelder reported that 90% of adolescents had menstrual cramps lasting for 48 hours or less [10]. In 23.8% of cases, dysmenorrhoea was not associated with other symptoms (fatigue, headache, backache, dizziness, anorexia/vomiting, abdominal pain/distension and diarrhoea). Most of the studies we reviewed reported the same duration of pain as in our study but the associated symptoms occurred with different frequencies [2,3,10,13,15].

It has been reported that the risk of dysmenorrhoea is higher in women with irregular, prolonged or heavy menstrual flow as well as early age of menarche [2,14,16,20]. In our study we found that prevalence of dysmenorrhoea was significantly higher among adolescents aged 16 and 17 years compared to those aged 14 years, those who had irregular cycles and those reporting heavier menstrual flow or a prolonged cycle ( $\geq 30$  days).

Treatment of dysmenorrhoea should be directed at providing relief from the cramping pelvic pain and associated symptoms. Non-steroidal anti-inflammatory drugs and oral contraceptives are reported as providing the most effective treatment [7]. The use of oral contraceptives by unmarried girls is, however, culturally unacceptable in our traditional and conservative community.

In our study, only 2.7% of adolescents consulted a physician or pharmacist. This is consistent with other findings that most adolescents with dysmenorrhoea self-medicate with the over-the-counter preparations; few consult health care providers

Table 5 Impact of dysmenorrhoea on daily activities

Activity limited <sup>a</sup>	Mild		Dysmenorrhoea Moderate		Severe		Total		$\chi^2$
	No.	%	No.	%	No.	%	No.	%	
No limitation	169	63.8	56	39.2	2	2.8	227	47.4	89.0
Daily home chores	73	27.5	72	50.3	60	84.5	205	42.8	79.0
Going out of the home	60	22.6	71	49.7	68	95.8	199	41.5	128.6
Participation in social events	51	19.2	66	46.2	70	98.6	187	39.0	152.5
Participation in sports	47	17.7	49	34.3	69	97.2	165	34.4	156.5
Concentration in class	28	10.6	32	22.4	57	80.3	117	24.4	147.9
Homework tasks	16	6.0	38	26.6	49	69.0	103	21.5	134.7
School attendance	13	4.9	41	28.7	43	60.6	97	20.3	116.4
Total	265	100	143	100	71	100	479	100	

<sup>a</sup>Categories are not mutually exclusive.  
P < 0.001.

[5,10]. We found that rest/relaxation, herbal/home remedies and/or drugs were used by 42.6%, 36.7% and 34.7% of participants respectively. The drugs included analgesics, NSAIDs and antispasmodics, mostly self-prescribed.

Banikarim, Chacko and Kelder reported that treatment for dysmenorrhoea in Hispanic adolescents included rest (58%), medication (52%), heating pad (26%), tea (20%), exercise (15%) and/or herbs (7%) [10]. It has been reported that the most common medications used by women with dysmenorrhoea were analgesics (53%) and NSAIDs (42%) [17].

Although not life threatening, dysmenorrhoea can be particularly disruptive to a woman's daily life and productivity. In the absence of appropriate pain relief, women with severe dysmenorrhoea may not be able to carry out their normal activities [7,8].

In our study, 47.4% of students with dysmenorrhoea reported no limitation of

daily activities. Activities most commonly limited due to dysmenorrhoea were daily home chores, going out of the home, participation in social events, participation in sports, concentration in class, homework tasks and attending school. All the limitations were significantly more frequent among students with severe dysmenorrhoea compared to those with mild or moderate pain. Banikarim, Chacko and Kelder reported that activities limited by dysmenorrhoea among adolescents included concentration in class (59%), sports (51%), class participation (50%), socialization (46%), homework (35%), test-taking skills (36%) and grades (29%) [10]. In a study in Morocco, menstrual pain was often cited as the main single cause of school absenteeism among adolescent girls [16].

Reproductive health information and education programmes for adolescents are being introduced in many countries, and these could be an important means of providing information about treatment options

for menstrual disorders [8]. Young girls may be more open than older women to discussing menstruation.

The introduction of a reproductive health component into school health education programme could help in providing information, education and support to students regarding reproduction in general

and menstrual problems in particular. It is essential to make treatment available for girls. Many girls may feel shameful and reluctant to report dysmenorrhoea and consequently, do not seek medical advice. It is one of the roles of school health care providers to ask about and screen for dysmenorrhoea and offer treatment if necessary.

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### Adolescent health and development

One in every five people in the world is an adolescent – defined by WHO as a person between 10 and 19 years of age. Out of 1.2 billion adolescents worldwide, about 85% live in developing countries and the remainder live in the industrialized world. Adolescents are generally thought to be healthy: by the second decade of life, they have survived the diseases of early childhood, and the health problems associated with ageing are still many years away. Yet adolescents are still a vulnerable sector of the population and many do die prematurely. WHO, along with its partners, UNICEF and UNFPA, advocate an accelerated approach to promoting the health and development of young people in the second decade of life. Further information on the work of the Adolescent Health and Development Team within the WHO Department of Child and Adolescent Health and Development is available at: [http://www.who.int/topics/adolescent\\_health/en/](http://www.who.int/topics/adolescent_health/en/)