

Prevalence of Dysmenorrhea and Its Psychological Impact on Adolescent Girls

Rania El-Sayed Moustafa¹, Waleed Ali Sayed Ahmed²,
Mariam Lotfy Mohammed², Rasha El-Sayed Abd El-Fatah²

¹ Resident of Obstetrics and Gynecology, Port-Said General Hospital, Faculty of Medicine, Cairo University, Egypt

² Obstetrics and Gynecology Department, Faculty of Medicine, Suez Canal University, Egypt

Corresponding author: Rania El-Sayed Moustafa, **Tel:** +2 01271464115, **E-mail:** raniayed233@gmail.com

ABSTRACT

Background: A severe, excruciatingly painful cramping sensation in the lower abdomen is known as dysmenorrhea, or painful menstruation. It is the most typical gynecological condition among teenagers.

Objective: The aim of the current study is to assess the prevalence of dysmenorrhea among adolescent girls, to determine the psychological impact of dysmenorrhea on adolescent girls and to detect the differences between adolescent girls with and without dysmenorrhea regarding the frequency and severity of psychosomatic manifestations.

Patients and methods: A cross-sectional study was conducted on 520 adolescent girls from 4 Port-Fouad and Port-Said Secondary schools. The enrolled girls were evaluated for the presence of the characteristic symptoms of primary dysmenorrhea to assess the prevalence of dysmenorrhea among them. The participants were subdivided into two groups according to the presence or absence of dysmenorrhea to compare between girls with and without dysmenorrhea regarding the frequency of psychosomatic manifestations. General characteristics, gynecological data and family history were assessed and compared with presence or absence of dysmenorrhea.

Results: Prevalence of dysmenorrhea was high (74.6%); younger and obese girls were more prevalent to dysmenorrhea. Dysmenorrhea does lead to important school absenteeism.

Conclusion: Female teenagers at Port-Fouad and Port-Said Secondary Schools had a high prevalence of dysmenorrhea. Abdominal pain was the most common type of pain, with most girls reporting a moderate level of discomfort.

Keywords: Menstrual Pain, General Health Questionnaire, Dysmenorrhea, School absenteeism, Cross sectional study, Suez Canal University.

INTRODUCTION

Teenagers between the ages of 13 and 19 are regarded to be in adolescence, which can be thought of as a transitional stage in their physical and psychological growth as they approach maturity⁽¹⁾.

Menarche, or the beginning of menstruation, is a sign of female pubertal maturation. The onset of menarche is frequently accompanied by issues such as dysmenorrhea, heavy bleeding, and irregular menstruation. One of these that many adolescent females commonly deal with is dysmenorrhea⁽²⁾.

Several discomforts, including backaches, constipation, cramping in the abdomen, nausea, and vomiting, may occur during the menstrual cycle. Adolescent girls frequently experience dysmenorrhea, which lowers their quality of life (QOL). The most prevalent gynecologic issue in women of all ages and races is dysmenorrhea, which is described as unpleasant cramps that accompany menstruation. Dysmenorrhea is also one of the most common causes of pelvic pain⁽³⁾.

Teenage girls who experience dysmenorrhea typically have primary symptoms, regular ovulatory cycles, and no pelvic pathology. Additionally, it has been observed that between 5 and 10 percent of females in their late teens experience severe spasmodic dysmenorrhea, which interferes with their social and academic lives⁽⁴⁾.

Numerous studies support the value of psychological evaluation, but more research is needed to determine how psychological problems and dysmenorrhea are related. To our knowledge, no

comparable Egyptian research has been done to investigate this theory. In order to better understand the connection between dysmenorrhea and adolescent girls' psychological health, this study will be started.

The aim of the current study is to assess the prevalence of dysmenorrhea among adolescent girls, to determine the psychological impact of dysmenorrhea on adolescent girls and to detect the differences between adolescent girls with and without dysmenorrhea regarding the frequency and severity of psychosomatic manifestations.

PATIENTS AND METHODS

Adolescent girl students from Port-Fouad and Port-Said secondary schools were chosen by simple random sampling for a cross-sectional study. To determine the prevalence of dysmenorrhea among the enrolled girls, the girls were asked for the presence of the typical symptoms of primary dysmenorrhea. To compare the frequency of psychosomatic symptoms in females with and without dysmenorrhea, the participants were divided into 2 groups based on the presence or absence of dysmenorrhea.

Inclusion criteria: Adolescent girls of 13-19 years (girls after onset of menarche).

Exclusion criteria: Patients who have been diagnosed with a psychiatric condition or who have previously had one, or who have declined to participate.

Study Procedures:

General characteristics; age, obesity and school absenteeism.

According to the World Health Organization's (WHO) classification of body mass index (BMI), obesity was considered to be a condition in which body fat is elevated to the point that health and wellbeing are compromised. BMI is employed as a substitute measure for body fat in population research because measuring body fat is difficult to do. The current cutoff values for overweight are 25 kg/m² and 30 kg/m², respectively ⁽⁵⁾.

As the major kind of dysmenorrhea is the most prevalent in this age group, we considered school absenteeism to be defined as being absent from school for at least 1 school day. A few hours before menstruation, the pain begins and can last up to 72 hours. It typically worsens the first day of menstruation and then progressively gets better ⁽⁶⁾.

Gynecological data: Menarche age was divided into three ranges: 12 years, 13–15 years, and >15 years, Menstrual cycle irregularity, which was divided into regular and irregular periods, the length of the menstrual cycle, which was divided into 6 and >7 days, the duration of the menstrual cycle, which was divided into three groups: 21 days, 22–34 days, and >35 days and family history, which was divided into three categories: present, absent, and unknown.

The prevalence of dysmenorrhea: The following factors were used to determine whether someone had dysmenorrhea ⁽⁷⁾: Girls who reported recurring lower abdominal/pelvic pain or discomfort lasting for one to three days per menstrual cycle, with or without radiation to the back or legs, and who first experienced it six to twelve months following menarche. The following are examples of supporting symptoms: fatigue, headache, hostility, anxiety, dizziness, nausea, vomiting, and diarrhea. Site and intensity of pain were classified as follows: stomach pain, pain in both the legs and the abdomen, and simply leg pain. Pain intensity was measured using the Visual Analogue Scale (VAS). Dysmenorrhea and general features are related, according to gynecological data.

Psychological distress using General Health Questionnaire (GHQ) (Appendix A and B): The GHQ is a self-administered screening tool designed to identify psychiatric illnesses in samples from the general public. Instead of lifelong dysfunction, the instrument concentrates on interruptions in normal functioning (detects abnormalities of less than two weeks' length). The questionnaire is quick and simple to conduct, and it is objective in that it does not require the person distributing it to make judgments about the respondent ⁽⁸⁾.

Arabic version: An Arab community has found the Arabic version of the GHQ to be a reliable screening

tool with an overall sensitivity and specificity of 0.83 ⁽⁹⁾.

Ethical Approval: This study was ethically approved by the Institutional Review Board of the Faculty of Medicine, Suez Canal University. Written informed consent was obtained from all participants. This study was executed according to the code of ethics of the World Medical Association (Declaration of Helsinki) for studies on humans.

Statistical Analysis

The collected data were introduced and statistically analyzed by utilizing the Statistical Package for Social Sciences (SPSS) version 22 for windows. Qualitative data were defined as numbers and percentages. Chi-Square test and Fisher's exact test were used for comparison between categorical variables as appropriate. Quantitative data were tested for normality by Kolmogorov-Smirnov test. Normal distribution of variables was described as mean and standard deviation (SD), and independent sample t-test/Mann-Whitney U test was used for comparison between groups. P value <0.05 was considered to be statistically significant.

RESULTS

The studied population general characteristics (age and obesity) are summarized in Table 1.

Table (1): General characteristics of the studied population (n=520).

General characteristics		
Age (years)	Mean ± SD	16.8 ± 0.7
	Range	(16-18)
Obesity Frequency (%)	Obese	60 (11.5)
	Non-obese	460 (88.5)

Other related gynecological data of the studied population as age at menarche, irregularity of the menstrual cycle, duration of menstruation, intermenstrual cycle length and family history were assessed. Most of girls had menarche at age of 13-15 years, and with regular and average cycle (Table 2).

Table (2): Gynecological data of the studied population (n=520).

Gynecological data	Frequency (%)	
Age at menarche	<12 years	44 (8.5)
	13-15 years	486 (90)
	>15 years	8 (1.5)
Irregularity of the menstrual cycle	Regular	411 (79)
	Irregular	109 (21)
Duration of menstruation	<6 days	456 (87.7)
	>7 days	64 (12.3)
Intermenstrual cycle length	<21 days	56 (10.8)
	22-34 days	404 (77.7)
	>35 days	60 (11.5)
Family history	Present	136 (26.2)
	Absent	384 (73.8)

The prevalence of dysmenorrhea among the studied population was found to be high as 74.6% (**Figure 1**).

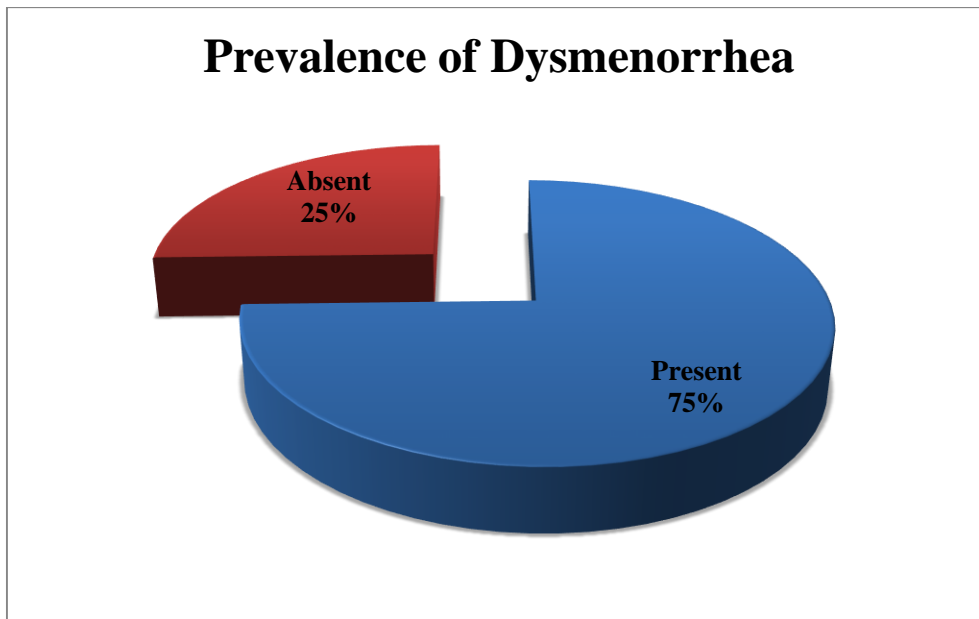


Figure (1): Prevalence of dysmenorrhea among the studied population (n=520)

Most of girls with dysmenorrhea had age at menarche at 13-15 years, inter-menstrual cycle length of 21-35 days length and negative family history. However, there were no statistically significant observed differences (P-value >0.05) regarding regularity of the menstrual cycle and duration of menstruation (**Table 3**).

Table (3): Association of general characteristics, gynecological data and dysmenorrhea among the studied population (n=520).

General characteristics Frequency (%)		Dysmenorrhea		Test value	P-value
		Present (n=388)	Absent (n=132)		
Age	Mean ± SD	16.6 ± 0.5	16.9 ± 0.8	U=20680	0.0001*
Obesity	Obese	352 (91%)	24 (18%)	$\chi^2=7.649$	0.008**
	Non-obese	36 (9%)	108 (82%)		
School absenteeism	Present	208 (54%)	12 (9%)	$\chi^2=58.84$	0.0001**
	Absent	180 (46%)	120 (91%)		
Age at menarche	<12 years	20 (5%)	24 (18%)	F=22.183	0.0001****
	13-15 years	364 (94%)	104 (79%)		
	>15 years	4 (1%)	4 (3%)		
Regularity of the menstrual cycle	Regular	307 (79%)	104 (79%)	$\chi^2=0.007$	1**
	Irregular	81 (21%)	28 (21%)		
Duration of menstruation	<6 days	340 (88%)	116 (88%)	$\chi^2=0.006$	1**
	>7 days	48 (12%)	16 (12%)		
Inter-menstrual cycle length	<21 days	32 (8%)	24 (18%)	$\chi^2=13.712$	0.001***
	21-35 days	304 (78%)	100 (76%)		
	>35 days	52 (14%)	8 (6%)		
Family history	Present	124 (32%)	12 (9%)	$\chi^2=26.668$	0.0001***
	Absent	264 (68%)	120 (91%)		

*Mann-Whitney U Test is statistically significant at level of confidence of 95%.
 ** Pearson Chi-Square Test is statistically significant at level of confidence of 95%.
 *** Pearson Chi-Square Test is statistically significant at level of confidence of 95%.
 **** Fisher's Exact Test is statistically significant at level of confidence of 95%.

Among population with dysmenorrhea, menstrual pain characteristics like pain site and pain degree using VAS were assessed (Table 4 and Figure 2).

Table (4): Menstrual pain characteristics among population with dysmenorrhea (n=388).

Menstrual pain characteristics		
Pain degree	Mean ± SD	5.07 ± 1.5
	Range	(2-9)
	Mild	124 (32%)
	Moderate	236 (60.8%)
	Severe	28 (7.2%)
Pain site	Abdomen	300 (77.3%)
	Leg	0 (0%)
	Both	88 (22.7%)

Finally, the association between distress diagnosed by GHQ and dysmenorrhea among the studied population was assessed; it was found that distress was more prevalent among those with dysmenorrhea. This observed difference was statistically significant (Table 5).

Table (5): Association between of distress by General Health Questionnaire (GHQ) and dysmenorrhea among the studied population (n=520).

GHQ		Dysmenorrhea		Test value	P-value
		Present (n=388)	Absent (n=132)		
Distress Frequency (%)	Present	332 (86%)	92 (70%)	$\chi^2=16.479$	0.0001**
	Absent	56 (14%)	40 (30%)		

* Pearson Chi-Square Test is statistically significant at level of confidence of 95%.

DISCUSSION

Our cross-sectional study's goals were to identify differences between adolescent girls with and without dysmenorrhea in terms of the frequency and severity of psychosomatic manifestations (somatic symptoms, anxiety/insomnia, social dysfunction, and depressive disorders), as well as to assess the prevalence of dysmenorrhea among adolescent girls.

A total of 520 teenage girls from the secondary schools in Port-Fouad and Port-Said made up our sample. According to our estimates, 74.6% of adolescent girls have dysmenorrhea. Despite the fact that several studies found similar or even greater prevalences in this age group, this is a significant prevalence.

This conclusion is in line with that of several researches that looked at the same population or age group in Egypt, the Arab world, or elsewhere. Population studies on dysmenorrhea, however, are rare for Egyptian women and almost nonexistent for teenage girls or do not address all relevant aspects.

El-Gilany *et al.* ⁽⁶⁾, in a cross-sectional survey conducted in the Mansoura district of Egypt between November 2001 and April 2002 with female secondary-school students enrolled in government schools, the prevalence of dysmenorrhea among adolescent girls was reported to be 75%, which is quite similar to our study.

The prevalence of dysmenorrhea was 76.1% in another study conducted in Egypt to look at the causes, effects, and treatment methods of dysmenorrhea among teenage secondary school girls in Assiut city ⁽¹⁰⁾.

When the ovulatory menstrual cycle starts, dysmenorrhea frequently starts usually at or shortly after menarche. That's why there is a relatively high prevalence among this age group in our study ⁽¹¹⁾.

However, a study conducted for adolescent girls to investigate the incidence and pattern of dysmenorrhea and to look at the menstrual hygiene practices among students in several El-Minia Nursing Schools, Egypt, revealed a higher prevalence rate (94.4%) of dysmenorrhea ⁽¹²⁾.

In this study, we evaluated the features of menstruation pain as well as the pain's site and VAS score. The majority of girls (60.8%) reported moderate discomfort, which was measured as (mild 32%, moderate 60.8%, and severe 7.2%). Regarding the location of the pain, 77.3% of the study's adolescent girls reported stomach pain as their primary menstrual pain, followed by 22.7% who reported discomfort in both their legs and abdomen. Nobody, however, merely mentioned leg pain.

In earlier research, the degree of dysmenorrhea varied substantially. According to the Mansoura study in Egypt, mild dysmenorrhea affected 75% of the students, moderate dysmenorrhea affected 30%, and severe dysmenorrhea affected 14.8%. Most girls experienced just mild pain ⁽⁶⁾. In the Assiut study, 76.1% of the students had dysmenorrhea; the severity was mild 26.6%, moderate 32.0%, and severe 41.4%; the majority felt moderate pain ⁽¹⁰⁾. In a study conducted by El-Minia Nursing Schools, the level of pain was divided into 3 categories: first-degree (49.0%), second-degree (34.4%), and third-degree (16.6%). The majority of

participants had the lowest degrees of pain; however, dysmenorrhea was quite common (94.4%)⁽¹²⁾.

In our study, 77.3% of participants reported having pain in their abdomen. It was quite similar to what the El-Minia Nursing Schools' investigation had discovered⁽¹²⁾ and by a study was conducted among Turkish female adolescents (13–18 years old) to determine the impact of menstrual pain length and severity on academic performance and attitudes toward family and friends⁽¹³⁾.

According to what we discovered in the current investigation, the dispute revealed a weak or even nonexistent relationship between obesity and dysmenorrhea.

Our study revealed that girls with dysmenorrhea typically reached menarche between the ages of 13 and 15, which was similar with Mansoura survey findings⁽⁶⁾, where most of girls with dysmenorrhea had menarche at age of 13 years, in addition to the Assiut study and the El-Minia nursing schools' study⁽¹²⁾, and the study conducted in Turkey⁽¹³⁾. This was consistent with **Khanna et al.**⁽¹⁴⁾ study done in Rajasthan who discovered that 13.2 years is the average age at menarche, and the study by **Ammari et al.**⁽¹⁵⁾ reporting that girls in Jordan reached menarche at 13.8 years of age. When the ovulatory menstrual cycle begins, at or soon after menarche, and only during ovulatory cycles, primary dysmenorrhea occurs⁽¹¹⁾.

According to the current study's findings on menstrual cycle features, the majority of females with dysmenorrhea had regular cycles, with menstrual flows lasting between 6 and 35 days on average. Given that the cohort under study is in the age range for primary, physiological dysmenorrhea, these data are regarded as typical gynecological history.

Study conducted by El-Minia Nursing Schools confirmed this conclusion⁽¹²⁾. Menstrual cycle length ranged from 20 to 35 days, and the majority of girls had regular cycles. This is similar to the findings of the Assiut study, which found that most girls had largely irregular cycles with average menstrual flow duration of 5.2 (SD 1.1) days and average cycle length of 29.4 (SD 3.58) days⁽¹⁰⁾.

However, in the Mansoura study, the majority of girls had menstrual cycles lasting between 30 and 6 days⁽⁶⁾. The fact that all of these statistics are subjectively reported and therefore very susceptible to recall bias may help to explain these minor variances among the Egyptian adolescent girls.

In our study, dysmenorrhea was linked to family history in the population under investigation. Dysmenorrhea appears to be a family issue because the mother or a sibling may have experienced the same symptoms. For women who have dysmenorrhea, a history of the condition appears to be a significant risk factor. According to some experts, this can be explained by the fact that daughters of moms who feel monthly discomfort also do so, which is connected to a learnt behavior from the mother. The pathophysiology of

primary dysmenorrhea may be influenced by hereditary factors, which can increase the likelihood of a familial predisposition. Therefore, a favorable family history may be a powerful indicator of dysmenorrhea in children and siblings.

Again, a study conducted in India by **Kumbhar et al.**⁽¹⁶⁾ to determine the incidence of dysmenorrhea among adolescent girls found that the prevalence of dysmenorrhea was considerably higher among girls having a family history of the condition (14-19 years). Another study conducted in Turkey found that having a family history of dysmenorrhea was a significant risk factor for developing the condition⁽¹⁷⁾ as well as in a Korean study⁽¹⁸⁾.

In the current study, we evaluated the symptoms of dysmenorrhea, including fatigue, headache, hostility, anxiety, dizziness, nausea, vomiting, and diarrhea. The symptoms of dysmenorrhea are arranged logically, with malaise appearing in all girls who have the condition while headache and dizziness are the most common ones. It was remarkably similar to the data from the Mansoura research⁽⁶⁾.

The symptoms of dysmenorrhea in the Assiut research were slightly different, with nervousness and irritability being the most common symptoms, followed by headache and dizziness⁽¹²⁾.

In our study, dysmenorrhea does contribute to school absence. Menstrual abnormalities have a negative impact on school attendance, according to many researchers that looked into this issue in various areas. Dysmenorrhea was found to be substantially linked to poorer academic performance, engagement in sports, and peer socializing in the Assiut study⁽³⁴⁾ as well as in Mansoura study⁽⁶⁾.

Dysmenorrheal pain and psychological distress may significantly affect one's ability to participate in academic, recreational, and social activities.

Chan discovered that 12% of Chinese girls in Hong Kong skipped class due to menstrual issues⁽¹⁹⁾. John also discovered that 23% of the populations under study who suffer from menstruation issues miss school⁽²⁰⁾.

In addition, Baker discovered that 32% of medical students admitted to missing one day of class because of premenstrual syndrome (PMS)⁽²¹⁾. Furthermore, **Eryilmaz** discovered that the major conspicuous side effects of dysmenorrhea were an inability to concentrate in class, tardiness, and missed exams. There were statistically significant associations between pain intensity and duration and academic achievement⁽¹³⁾.

We examined the study subjects for signs of any psychological disturbance related to their periods. Distress was more common (85.6%) among those with dysmenorrhea, according to our research.

Depression and anxiety were found to be closely related to menstruation pain in Alonso and Coe's study, which looked at the impact of social support on dysmenorrhea and whether social support influences the

association between painful symptoms and negative emotions⁽²²⁾. Other research focused mostly on anxiety and depression as the psychological diseases connected to dysmenorrhea.

In case-control research by **Gagua et al.**⁽²³⁾ patients with primary dysmenorrhea (PD) had considerably greater depression scores than the control group, and adolescents with PD also had higher rates of severe anxiety.

According to **Dorn et al.**⁽²⁴⁾ depression and anxiety were once again significantly correlated with dysmenorrhea and by **Balık et al.**⁽²⁵⁾ in Adolescent Girls. According to **Granot et al.**⁽²⁶⁾ studies the anxiety level was noticeably higher in dysmenorrheic women than in non-dysmenorrheic women.

CONCLUSION

Female teenagers at Port-Fouad and Port-Said Secondary Schools had a high prevalence of dysmenorrhea. Abdominal pain was the most common type of pain, with most girls reporting a moderate level of discomfort. All girls with dysmenorrhea displayed malaise as an accompanying symptom, which was followed by headache and dizziness.

DECLARATIONS

- **Consent for publication:** I attest that all authors have agreed to submit the work.
- **Availability of data and material:** Available
- **Competing interests:** None
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- **Conflicts of interest:** no conflicts of interest.

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