Zagazig University Medical Journal
www.zumj.journals.ekb.eg

https://doi.org/10.21608/zumj.2024.234154.2873 Volume 30, Issue 1.7, Oct. 2024, Supplement Issue

Manuscript ID: ZUMJ-2308-2839 (R1) **Doi: 10.21608/ZUMJ.2023.227000.2839**

ORIGINAL ARTICLE

Assessment of Quality of Life among Adolescent Females with Dysmenorrhea at Zagazig Secondary Schools

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Submit Date 05-08-2023
Revise Date 07-08-2023
Accept Date 09-08-2023

ABSTRACT

Background: Dysmenorrhea is defined as a cyclic lower abdominal or pelvic pain that may radiate to the lower back, legs, and inner thighs. It has a significant impact on quality of life, causing many adolescents and young women to be absent from their responsibilities due to pain**.Objective:** The current study aimed to assess the prevalence of dysmenorrhea, to assess QOL in adolescent females with dysmenorrhea, and to identify associated risk factors of dysmenorrhea among adolescent females at Zagazig secondary schools.**Subjects and methods**: This cross-sectional study included (287) subjects selected by a multistage sampling technique from 39 secondary schools inthe Zagazig district. The prevalence of dysmenorrhea, associated risk factors, and its effect on quality of life among adolescent female students were assessed using four standardized questionnaires**. Results:** The present study revealed that Dysmenorrhea was reported in 89.9% of studied girls. Nearly half of participants (48.8%) reported severe pain. There was a statistically significant relation between the presence of dysmenorrhea and all of the mood disturbances, changes in appetite, sense of bloating, and fatigue. Among factors significantly related to poor QOL among studied girls, urban residence, dysmenorrhea, irregular menses, and fatigue during menses significantly increase the risk of poor QOL by 2.101, 6.983, 1.682, and 2.241 folds respectively. **Conclusions:** dysmenorrhea substantially reduces the quality of life in adolescent girls. Dysmenorrhea is the most important predictor of poor quality of life among factors related considerably to poor QOL among studied girls. **Keywords:** dysmenorrhea; quality of life and adolescent female

INTRODUCTION

Dysmenorrhea holds significant importance in the field of adolescent medicine as it greatly affects the quality of life for teenage and young adult women. Research has indicated that dysmenorrhea is the primary cause of frequent, short-term school absences among adolescent girls, and its prevalence in this group ranges from 16% to potentially as high as 93% [1].

For adolescents and women exhibiting characteristics of primary dysmenorrhea, a

pelvic examination is typically unnecessary. However, a pelvic examination is recommended for sexually active adolescents and women suspected of having secondary dysmenorrhea or those who do not respond to treatment [2].

Dysmenorrhea has a significant impact on quality of life, leading to limitations in school performance and work efficiency, and causing many adolescent and young women to be absent from their responsibilities due to pain [3].

METHODS

This was a cross-sectional study conducted at Zagazig secondary schools. There are 39 secondary schools in Zagazig district, (18 rural and 21 urban) from which our sample was selected.

Inclusion criteria: Menstruating female students at Zagazig secondary schools aged from 14-20 years.

Exclusion criteria: Females with a history of any chronic pelvic diseases (like ovarian cyst, fibroid, or endometriosis) or who have a major pelvic surgery. Those were excluded from the study as the presence of any pelvic pathology is suggestive of secondary dysmenorrhea which is rare in this age and requires pelvic examination which cannot be done in non-sexually active adolescent or non-married students and Married females and taking oral contraceptive pills.

Sample size:

The total number of adolescent female students in the 39 secondary schools at Zagazig district is 16600, the prevalence of Dysmenorrhea in adolescents is 74.6 % (El Gilany et al., 2005), and so the sample size was 287 persons calculated using Open-epi with effect size 1 and Confidence limits 5%. A multistage sample was adopted for the selection of adolescent females from 39 secondary schools at Zagazig district, (18 rural and 21 urban).

Data collection tools: Four standardized questionnaires will be used in this study as follows:

Socio-demographic questionnaire: Socio-demographic characteristics of adolescent females were guided by (Fahmy et al., 2015) and included: Education (of both fathers and mothers), Occupation (of both fathers and mothers), Computer use, Per-capita income, Family size, Crowding index, Sewage disposal.

A predesigned questionnaire: It inquiries about clinical data such as weight, height, age, menstrual characteristics (pain during menstruation, age at menarche, frequency of menstruation, duration of menses, regularity of menstruation ,associated symptom and source of information about menses) Also inquiries about pain characteristic during menstruation.

A Numeric Pain Rating Scale (NRS) was used for participants who said that they had painful menstruation to measure the intensity of pain. It's a line with equidistant marks from 0 to10.The minimum score was 0 and maximum score was10.The scores were arbitrarily classified as mild dysmenorrhea (1-3), moderate dysmenorrhea (4-7) and severe dysmenorrhea (8-10).

SF-36 Health Survey questionnaire for assessment of quality of life: The SF-36 consists of 36 items, 35 of which are used in the calculation of 8 separate scale scores; The physical functioning scale (10 items), The general health, and mental health scales have 5 items each, the vitality and role physical scales have 4 items each, the role emotional scale has 3 items, and the bodily pain and social functioning scales have 2 items each. The remaining item of the SF-36 is a health

transition question that asks about a change in general health over the past 12 months.

Operational design: It was carried out on 10% of the sample of adolescent females at Zagazig secondary schools to test the questionnaires for clarity, understanding, consistency and time needed to fill them out.

Fieldwork: Adolescent females attending Zagazig secondary schools were interviewed by face-to-facediscussions to ask about painful menstruation, and to fill out the first and second questionnaires, after taking consent.The participants who said that they had painful menstruation were asked to fill out the numeric pain rating scale to detect the severity of dysmenorrhea at the same session mentioned above.A second face-to-face session in which we explain the (SF-36 Health Survey of Quality of Life) questionnaire, and the time of filling it at first 3 days of menstruation (for all participants) and when pain-free at days 10 to 12 (late follicular phase) (for dysmenorrhic group only), then give the participants copies of (SF-36 Health Survey of quality of life) questionnaire to fill it at the selected days and send the finding to me online using what's up application.

Administrative design and ethical aspect:The protocol of the study was be reviewed by Institutional Review Board (IRB) of the faculty. The necessary official permission" to carry out the study was obtained. Informed consents were also obtained from adolescent females above 18 years old and from the guardian of females under 18 years old, to participate in the study.

STATISTICAL ANALYSIS

Data analysis was performed using the software SPSS (Statistical Package for the Social Sciences) version 26. Categorical variables were described using their absolute frequencies and were compared using the chi-square test, fisher exact and Monte Carlo tests when appropriate. To compare ordinal data between two groups, chi square for trend test was used. Shapiro-Wilk test was used to verify assumptions for use in parametric tests. Quantitative variables were described using their means and standard deviations. To compare quantitative data between two groups, independents sample t test (for normally distributed data) was used. Binary logistic regression was used to identify independent risk factors associated with certain health problems. The level of statistical significance was set at $P<0.05$. A highly significant difference was present if $p\leq0.001$.

RESULTS

In this study the age of studied girls ranged from 14 to 19.5 years. Body mass index ranged from 15.06 to 39.45 kg/m^2. Large percentage of them (69.7%) had middle SES and 53.7% came from rural areas. Pain among participants lasted from 1 to 10 days and 48.8% reported severe pain. Concerning the time for starting menses, 74% had pain from the first menses, and 84.1% had pain from the first day of menses. Fifteen girls consulted doctors for dysmenorrhea 129 girls needed tablets as OTC while 7 reported that they were prescribed to them by a physician.

Table 1: Predictors of dysmenorrhea among studied participants

	β	p	AOR	95% C.I.	
				Lower	Upper
Mood disturbance	1.364	.003	3.914	1.595	9.602
Fatigue	1.130	.014	3.096	1.252	7.659
Loss of appetite	1.104	.014	3.016	1.250	7.276

AOR adjusted odds ratio CI Confidence interval *p<0.05 is statistically significant

Presence of mood changes, fatigue during menses and loss of appetite significantly increase the risk of dysmenorrhea by 3.91, 3.1, and 3.02 folds respectively (Table 1)

Table 2: Relation between dysmenorrhea and quality of life of studied participants

	Dysmenorrhea		**t**	**p**
	Present	Absent		
	Mean ± SD	Mean ± SD		
General health	13.05 ± 3.29	15.03 ± 4.23	-2.989	0.003*
Reported health transition	2.9 ± 1.21	3.34 ± 0.9	-1.901	0.053
Physical functioning	19.73 ± 4.17	21.69 ± 5.16	-2.334	0.02*
Role physical	4.72 ± 1.06	5.83 ± 1.42	-5.113	<0.001**
Role emotional	3.64 ± 0.94	4.38 ± 1.08	-3.949	<0.001**
Social functioning	5.78 ± 1.9	7.28 ± 1.83	-4.037	<0.001**
Bodily pain	5.64 ± 2.16	10.02 ± 2.04	-10.38	<0.001**
Vital domain	8.76 ± 3.42	12.83 ± 4.52	-5.851	<0.001**
Mental health domain	13.79 ± 5.11	17.38 ± 4.75	-3.605	<0.001**
Total score	8.67 ± 1.5	12.68 ± 1.83	-31.143	<0.001**

t independent sample t test *p<0.05 is statistically significant **p≤0.001 is statistically highly significant

There is statistically significant relation between presence of dysmenorrhea and all domains of quality of life except for reported health transition domain (Table 2)

Table 3: Change in quality of life of studied participants with dysmenorrhea in first three days and day 10 -12: (n=258)

	Dysmenorrhea		**t**	**p**
	During first 3 days	**During 10-12 days (or late follicular phase)**		
	Mean ± SD	**Mean ± SD**		
General health	**13.05** ± 3.29	17.07 ± 3.67	-17.522	<0.001**
Reported health transition	**2.9** ± 1.21	3.57 ± 1.79	-5.474	<0.001**
Physical functioning	19.73 ± 4.17	25.88 ± 4.57	-19.603	<0.001**
Role physical	4.72 ± 1.06	6.97 ± 1.32	-21.482	<0.001**
Role emotional	3.64 ± 0.94	5.37 ± 1.0	-21.054	<0.001**
Social functioning	5.78 ± 1.9	8.08 ± 1.5	-17.061	<0.001**

	Dysmenorrhea		t	p
	During first 3 days	During 10-12 days (or late follicular phase)		
	Mean ± SD	Mean ± SD		
Bodily pain	5.64 ± 2.16	10.04 ± 2.13	-24.374	<0.001**
Vital domain	8.76 ± 3.42	16.53 ± 4.13	-23.154	<0.001**
Mental health domain	13.79 ± 5.11	20.58 ± 5.34	-17.044	<0.001**
Total score	8.67 ± 1.5	12.68 ± 1.83	-31.143	<0.001**

t paired sample t test **p≤0.001 is statistically highly significant
There is statistically significant increase in all domains of quality of life on day 10 -12(**(or late follicular phase)** when compared to 1st three days (table 3)

Table 4: Relation between dysmenorrhea related data and quality of life

	Poor quality of life N=139 (%)	Good quality of life N=119 (%)	χ^2	p	COR (95% CI)
Pain intensity **Mild** **Moderate** **Severe**	 5 (31.3%) 48 (41.4%) 86 (68.3%)	 11 (68.7%) 68 (58.6%) 40 (31.7%)	19.915¥	<0.001**	1(reference) 1.55(0.51 – 4.76) 4.73(1.54 – 14.52)*
Pain since when: **From first menses** **Since months** **Since year**	 107 (56%) 15 (38.5%) 17 (60.7%)	 84 (43%) 24 (61.5%) 11 (39.3%)	0.165¥	0.685	1(reference) 0.49(0.24 – 0.99)* 1.21(0.54 – 2.73)
Consult doctor: **No** **Yes**	 124 (52.2%) 15 (75%)	 114 (47.8%) 5 (25%)	3.893	0.048*	 2.76(0.97 – 7.83)
Pain relief remedies: **No** **Drugs** **Alternative medicine**	 28 (38.9%) 87 (65.4%) 24 (45.3%)	 44 (61.1%) 46 (34.6%) 29 (54.7%)	 15.207	 <0.001**	1 (reference) 2.97(1.64 – 5.38)* 1.3(0.63 – 2.67)

χ^2Chi square test ¥Chi square for trend test t independent sample t test *p<0.05 is statistically significant **p≤0.001 is statistically highly significant
There is statistically significant relation between quality of life and pain intensity, all of ways to relieve pain and need to consult doctor (Table 4). Severe pain and drugs as pain relief medications significantly increased risk of poor QOL by 4.73 and 2.97 folds respectively. Pain since months significantly decrease risk poor quality of life.

Table 5: Predictors of poor QOL among studied participants

	β	p	AOR	95% C.I.	
				Lower	Upper
Residence (urban)	0.742	0.004*	2.101	1.272	3.471
Dysmenorrhea	1.943	0.001**	6.983	2.266	21.471
Irregular menses	0.52	0.041*	1.682	1.021	2.77
fatigue during menses	0.807	0.024*	2.241	1.11	4.522

AOR adjusted odds ratio CI Confidence interval *p<0.05 is statistically significant **p≤0.001 is statistically highly significant

Among factors significantly related to poor QOL among studied girls, urban residence, dysmenorrhea, irregular menses, and fatigue during menses significantly increase the risk of poor QOL by 2.101, 6.983, 1.682 and 2.241 folds respectively (Table 5).

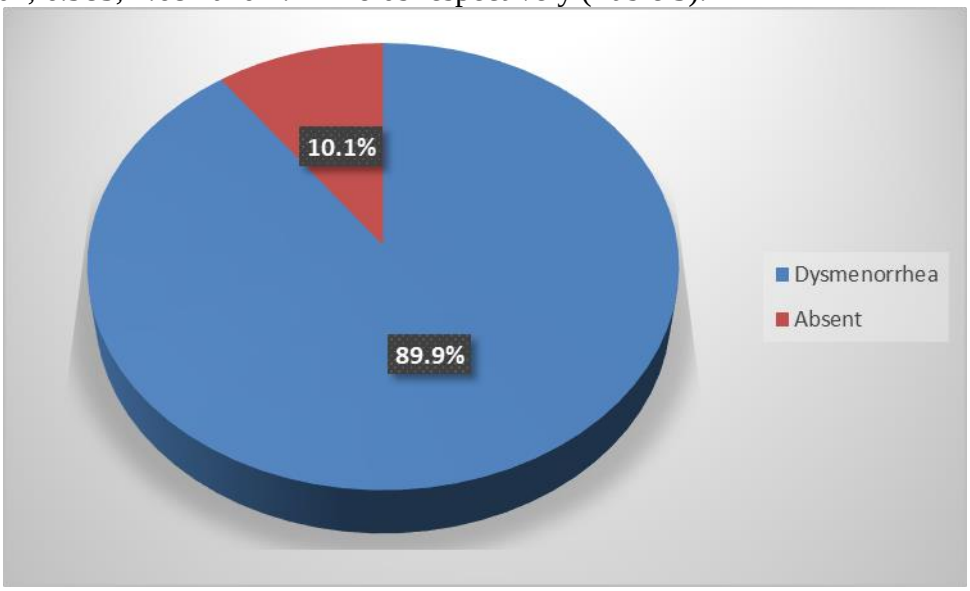

Figure 1: Pie chart showing the distribution of studied patients according to the presence of dysmenorrhea (n=287)

DISCUSSION

Dysmenorrhea is a major cause of gynecological health issues in women of reproductive age, regardless of their age, nationality, or economic status. The World Health Organization has identified dysmenorrhea as the primary reason for chronic pelvic pain [4].

A study was carried out among adolescent females attending Zagazig secondary schools, and it revealed that the prevalence of dysmenorrhea in this population was 89.9%. This percentage closely aligns with findings from other studies in different regions, such as Basra, Iraq (89.4%), Seven et al.'s study (84.9%) with older participants, and several other countries like Hispanic American adolescents (85%), Switzerland (86.6%), Thailand (84.9%), Korea (82%), and Nigeria (83.7%).

On the other hand, some Arab countries reported slightly higher prevalence rates, such as Oman (94%) and Dubai (94.7%), while Japan (15.8%), Lebanon (26.8%), and Georgia (52%) had lower prevalence rates.

It is challenging to pinpoint the exact reasons for these variations in dysmenorrhea prevalence, but factors like culture, lifestyle,

genetics, and social stress may play a role [17].

Regarding pain characteristics among those with dysmenorrhea in the study, the mean pain duration was 2.73 ± 1.45, and the mean pain intensity was 7.01 ± 2.18. This aligns somewhat with another study [18], which reported similar pain duration (2.79 ± 2.50) and slightly lower mean pain intensity (5.81 ± 2.70).

Among the participants with dysmenorrhea, nearly half experienced severe pain, while a smaller percentage had mild pain. These findings were consistent with other studies, suggesting that cultural differences in pain perception and pain threshold variability might contribute to these differences [20].

The study also indicated that most participants experienced pain starting on the first day of menstruation (84.1%). This finding was corroborated by other studies [21][22]. Additionally, around 72.1% of the students used pain relievers for relief, while 27.9% did not, which is comparable to another study [19] reporting similar rates of pain reliever usage.

Regarding menstruation characteristics other than pain, the average age of menarche was 12.7 ± 1.21 years, the mean duration of menstruation was 5.07 ± 1.59 days, and the average menstrual cycle duration was 28.61 ± 11.2 days. These figures were in agreement with another study [19] reporting similar age of menarche (12.74 ± 1.57 years), duration of menstruation (5.85 ± 1.23 days), and average menstrual cycle duration (28.76 ± 3.4 days).

Overall, the study aimed to explore the relationships between dysmenorrhea, basic participant data, and other menstrual characteristics to identify potential risk factors for dysmenorrhea among adolescent females.

In our study, we found no statistically significant relationship between dysmenorrhea and various demographic variables, including age, weight, height, BMI, residence, social class, parents' education, exercise habits, chronic diseases, or surgical history. However, there was a statistically significant association between dysmenorrhea and bad habits.

This finding partly aligns with the study conducted by Faramarzi, M., & Salmalian [24], which also showed no differences between the dysmenorrhea and non-dysmenorrhea groups concerning demographic variables, except for being the first child of the family. Additionally, exercise did not show any difference between the groups.

Regarding the relationship between dysmenorrhea and the amount of blood loss, our results differed from a meta-analysis study that suggested heavy menstrual flow as a risk factor for dysmenorrhea [25]. We also found contrasts with a French study that found a significant association between heavy menstrual blood flow and dysmenorrhea [26]. We proposed that the variation in defining heavy blood flow, based on subjective factors like the number of pads used per day, might be a potential reason for this difference. Other factors apart from blood flow could also influence dysmenorrhea and act as confounders.

Concerning the impact of dysmenorrhea on the quality of life (QoL), our study indicated that dysmenorrhea significantly increased the risk of poor QoL by 7.3 times. We found statistically significant differences between the dysmenorrhea and non-dysmenorrhea groups in all domains of QoL, except for the reported health transition domain. This is consistent with other studies that have shown reduced QoL in girls with dysmenorrhea [27], women with menstrual symptoms [28], and girls with menstrual problems [29].

Among the factors affecting QoL in our study group, we observed a statistically significant relationship between QoL, residence, and bad habits. Urban residents had a significantly higher risk of poor QoL, potentially due to factors like pollution, crowding, and psychological stress. However, this finding contrasts with a study conducted among

secondary schoolgirls in rural Kenya [30], where serious QoL problems were associated with adverse physical and sexual experiences and difficulties coping with menstruation.

Furthermore, having regular menstrual cycles significantly decreased the risk of poor QoL in our study. This finding agrees with a study by Shao et al. [31], suggesting that QoL was poorer in women with irregular menstrual cycles.

Upon logistic regression analysis to identify predictors of poor QoL in adolescent females, we found that urban residence, dysmenorrhea, irregular menses, and fatigue during menses were significant risk factors for poor QoL. Dysmenorrhea emerged as a strong predictor of poor QoL, aligning with a study by Shin et al. [32], emphasizing the importance of menstrual health in controlling QoL in adolescent females.

However, our results differ from KA & Cheah [33], whose study did not identify dysmenorrhea as a predicting factor of QoL among adolescents. Understanding how various factors contribute to predicting QoL and the role of menstrual health in this process can help healthcare professionals develop targeted and effective interventions to improve QoL in female adolescents [32].

CONCLUSION

Based on the findings of the present study, it can be concluded that: The majority of the studied students suffered from dysmenorrheal. Dysmenorrhea was found to have a significant effect on day-to-day activities, and having a negative effect on QoL. This indicates that dysmenorrhea is disturbing the life of girls when compared with the lives of girls without dysmenorrheal.

CONFLICT OF INTEREST

The authors declared that there were no conflicts of Interest.

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Citation:

Kamal, A., Frere, N., Elsayed, Y., Bahgat, S. Assessment of Quality of Life among Adolescent Females with Dysmenorrhea at Zagazig Secondary Schools. *Zagazig University Medical Journal*, 2023; (4250-4258): -. doi: 10.21608/zumj.2023.227000.2839