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Dysmenorrhea among Female University Students during the COVID-19 Pandemic

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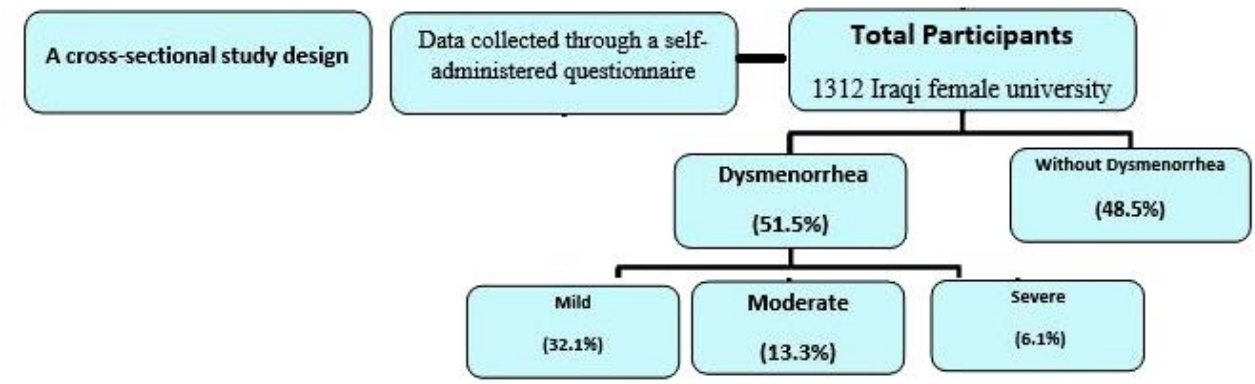
ABSTRACT

Dysmenorrhea is the most common gynecological symptom among adolescent girls and young women. It can have a significant impact on females' quality of life. The study aims to investigate the prevalence and impact of dysmenorrhea among Iraqi university students during the COVID-19 pandemic.
A cross-sectional study was conducted across different universities, including (College of Medicine, Pharmacy, and Dentistry) in Baghdad/Iraq, from March to May 2021. The data was collected through a self-questionnaire of 1312 Iraqi female university students. Dysmenorrhea was reported by (51.5%) of university students. Nearly one-third (32.1%) of participants rating dysmenorrhea as mild, (13.3%) moderate, and (6.1%) severe. Approximately (18.1%) of participants reported worsening of their menstrual pain, (21.3%) reported irregular menstrual cycles, (35.5%) reported increasing in learning difficulties, and (13.4%) reported increasing in the medication used to treat dysmenorrhea during the pandemic. The results revealed that there was a significant relationship between dysmenorrhea and the age of students, menstrual irregularity, medication use, and students who had Covid-19 infection (p-value <0.005). In addition, there was a highly significantly relationship between dysmenorrhea and learning disabilities as well as poor interpersonal relationships among Iraqi university students during the COVID-19 pandemic (p-value <0.001). According to the findings, dysmenorrhea has a negative impact on students' attendance, academic performance, and their interpersonal interactions during the COVID 19 pandemic. Future studies need to focus on improving pain management strategies to reduce the effects of dysmenorrhea so that young women can optimize their educational and future life opportunities.

GRAPHICAL ABSTRACT



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Introduction

Menstruation is a physiological event which represents a woman's fertility [1]. Women experience a variance of physical and psychological symptoms during menstruation, including pain, headache, and lethargy [2].

Dysmenorrhea is a common symptom in adolescent women which can affect between 45-95% of menstruating ones [3]. However, prevalence estimates vary widely due to methodological and cultural differences that may limit the generalizability of international estimation. Dysmenorrhea was classified as primary, with no underlying pathology, is more common in adolescents and usually occurs 6 to 12 months after menstruation. Moreover, the secondary dysmenorrhea that is associated with organic causes may occur years after menstruation [4-6].

The actual cause of primary dysmenorrhea is unclear; the most well-known etiology is the overproductions of intrauterine prostaglandins, particularly PGF2a and PGF2, which lead to uterine contractions and menstrual pain [7].

Dysmenorrhea affects individual social life, the educational and works performance, social relationships, and daily activities. The impacts of painful periods include absenteeism, anxiety, depression, poor work performance, and social withdrawal contributing to poor quality of life [3] [8-10].

Coronavirus disease 2019 (COVID-19) is a global public health emergency which causes a global pandemic [10-11]. The intense anxiety and fear associated with the Covid-19 pandemic and the disruption of daily life have created a global emotional health crisis. Women, in particular, have a higher prevalence of anxiety, depression, and stress-related disorders, owing to the physical and social health determinants. Furthermore, the negative impacts of the pandemic on women's emotional health can cause further unintended adverse health consequences [13]. Additionally, the pandemic may affect women's ability to control their menstrual cycle and health [14]. Therefore, the study aims to investigate the menstrual pattern, prevalence, and impact of dysmenorrhea among Iraqi university students during the COVID-19 pandemic.

Materials and Methods

This study is cross-sectional conducted from March to May 2021 at various universities (Medical, pharmacy, and Dentistry College) in Baghdad, Iraq. Data was collected through a self-administered questionnaire from 1,312 Iraqi university students. Ethical approval was obtained for this study from the College Council at the College of Medicine at Al-Iraqia University. All participants were informed of the study and informed written consent which had obtained. An online research tool had designed to collect information related to demographics, menstrual characteristics, menstrual pain, educational activities, and self-management practices during the pandemic. The Pearson correlation coefficient was used to measure the instrument's test-retest reliability. Descriptive statistics had used to present the study findings using SPSS version 22. For qualitative data, we used the chi-square test and the independent sample t-test. A P-value of 0.05 or less is considered statistically significant.

Results and Dissections

The average age of participants was (23.9±4.4) years old, the average age of menarche (12.1±0.8) years old and (69.8%) were single. The majority of students (78.7%) have regular menstrual cycles. The average BMI was (24.1±4.1) kg/m^2. Over half of the participants (56.9%) had suffered, or at least one of their relatives had Covid-19 infection (Table1).

It is also found that over half of the participants (51.5%) were experiencing varying degrees of dysmenorrhea during the Covid-19 pandemic. The highest frequency of participints (32.1%) were rated dysmenorrhea as mild, (13.3%) moderate and (6.1%) as severe menstrual pain (Table1). Moreover, the most frequent treatment used by female students (62.0%) for relieving their menstrual pain was analgesics (NSAID) (Table 3).

Furthermore, the impact of dysmenorrhea on educational activities was significant among Iraqi university students during the COVID-19 pandemic. The predominant impaired educational activities were lack of concentrations

(50.1%) and difficulty in working (42.7%) (Table 4).

During the pandemic, approximately (18.1%) of participants reported worsening of their menstrual pain, while (8.2%) were reported improvement of menstrual pain. (21.3%) reported irregular menstruation, (8.8%) had reported increases in menstrual irregularity. (32.5%) reported an increase in their BMI. Moreover, (35.5%) of students have reported increases in learning difficulties, whereas (12.3%) reported improvement in educational activities. Furthermore, (13.4%) of students reported an increase in the medication used for relieving dysmenorrhea during the pandemic (Table 3).

The current study indicated a significant relationship between dysmenorrhea and the age of students, menstrual irregularity, medication use, and Covid-19 infection of students (P<0.005). Furthermore, a highly significantly relationship had found between dysmenorrhea and the learning difficulties and interpersonal relationships of students (p-value<0.001) (Tables 3 and 4).

Table 1: Distribution of demographic and the other selected characteristics of Iraqi university students during the pandemic

Characteristic	n=1,312	%
Age (years), mean (SD)	(23.86±4.35)	
Age at menarche (years), mean (SD)	(12.14±0.78)	
Marital status % - Married - Unmarried	 396 916	 30.2% 69.8%
Menstruation % - Regular - Irregular	 1033 279	 78.7% 21.3%
Dysmenorrhea %	676	51.5%
Severity of menstrual pain - Mild - Moderate - Severe	 421 175 80	 32.1% 13.3% 6.1%
BMI (kg/m^2), mean (SD)	(24.05±4.1)	
Students or their relatives who had Covid-19 infection - Yes - No	 746 566	 56.9% 43.1%

SD, standard deviation; BMI, body mass index

Table 2: Relationship between dysmenorrhea and demographic and the other menstrual characteristics among Iraqi university students during the pandemic

Characteristic	Dysmenorrhea N= 676	Without dysmenorrhea N=636	Statistical test	df	*p-value*
Age	24.21±4.4	23.48±4.25	-3.064*	1310	**.002**
Marital status % - Married - Unmarried	 210(53.0%) 466(50.87%)	 186(46.96%) 450(49.1%)	.515**	1	.256
BMI (kg/m^2)	23.9±3.9	24.2±4.3	1.365*	1310	.172
menarche	12.1±0.8	12.14±0.76	0.191*	1310	.849
Menstruation % - Regular - Irregular	 511(49.46%) 165(59.13%)	 522(50.5%) 114(40.86%)	8.228**	1	**.002**
Covid-19 - Yes - no	 415(55.6%) 261(46.1%)	 331(44.36%) 305(53.88%)	11.670**	1	**.000**

* Independent samples t-test;**(χ2) Chi-square test; df: degree of freedom; BMI: body mass index

Table 3: Relationship between dysmenorrhea and the frequency of changes in the selected characteristics among Iraqi university students during the pandemic

	Increase	**decrease**	**No changes**	$\chi 2$	**df**	***p-value***
Body weigh	427 (32.5%)	298 (22.7%)	587 (44.7%)	.213	2	.899
Menstrual cycle regulation	115 (8.8%)	169 (14.9%)	1001 (76.3%)	4.081	2	.130
Medication used to treat dysmenorrhea	176 (13.4%)	205 (15.6%)	931 (71.0%)	11.602	2	**.003**
Educational difficulties	466 (35.5%)	161 (12.3%)	685 (52.2%)	.328	2	.849

χ2: Chi-square test; df: degree of freedom

Table 4: Relationship between dysmenorrhea and learning difficulties, Interpersonal relationships and management types among Iraqi university students during the pandemic

	N	%	$\chi 2$	**df**	***p-value***
Educational activities					
Lack of concentrations	657	50.1%	26.154	3	**.000**
Difficulty in working	560	42.7%	44.469	3	**.000**
Lack of motivations	480	36.6%	36.244	3	**.000**
Poor individual work performance	458	34.9%	50.630	3	**.000**
Poor collaborative work performance	206	15.7%	52.881	3	**.000**
Absenteeism	156	11.9%	96.792	3	**.000**
Interpersonal relationship					
Poor relationships with family	475	36.2%	42.569	3	**.000**
Poor interpersonal relationships with friends	291	22.2%	44.543	3	**.000**
Treatments For relieving of dysmenorrhea					
Medication use (analgesics)	814	62.0%	73.867	4	**.000**
Homeopathic medications	269	20.5%			
Exercise	93	7.1%			
Traditional remedies	69	5.3%			
Vitamin supplementation	67	5.1%			

χ2: Chi-square test; df: degree of freedom

Dysmenorrhea is one of the most common gynecological disorders in adolescent females. Menstrual pain harms the personal, family, and academic life of female students. [15] A WHO systematic review of dysmenorrhea reported that the incidence of dysmenorrhea was 16–81% [16]. Recent studies determined the prevalence of dysmenorrhea from 45–95% of menstruating women [3].

According to the results, the current study demonstrates that (51.5%) of the students experienced dysmenorrhea. The distribution of pain intensity indicated that (32.1%) of the participants had mild dysmenorrhea, (13.3%) moderate, and (6.1%) had severe menstrual pain. The prevalence of dysmenorrhea in our study is consistent with other studies results from Turkey (53.6%), Ethiopia (51.5%), and Georgia (52%) (16-18). However, it was lower than the prevalence of dysmenorrhea in Egypt (93%), Iran (73.27%) and Saudi Arabia (61%) [19-20]. Furthermore, the prevalence of dysmenorrhea in our study was more than that rated in developing countries (25-50%) of adult women [22].

Differences in the prevalence and severity of dysmenorrhea can be due to geographical and cultural differences in pain perception and variations in pain threshold. The wide prevalence variation may also be due to the focus on selected subject groups rather than a representative

sample of the female population in the community [18].

The present study reported that the average age of participants was (23.9±4.4) years old and the average age of menarche (12.1±0.8) years old. Most previous studies have included that dysmenorrhea peaks in late adolescence then declines with age [20]. Previous systematic reviews also revealed that the prevalence of dysmenorrhea decreases with age [19-22]. The findings of our study confirmed those of prior studies.

The current study indicated a significant relationship between dysmenorrhea and the age of students, menstrual irregularities, use of treatments, and the students or their relatives who had the Covid-19 virus infection ($p < 0.005$). These results were consistent with those of the previous studies among women of childbearing age [18][24]. Furthermore, recent studies have reported an increase in menstrual pain and a deterioration in a menstrual pattern during the pandemic [25-26]. In addition, a study from Palestine indicated that students with irregular menstrual cycles were almost twice as likely to have dysmenorrhea [27].

Finally, the study found an association between dysmenorrhea and academic performance. Further, there were a highly statistically significant relationships between dysmenorrhea and learning difficulties as well as the interpersonal relationships among students ($p<0.001$). Our findings was consistent with findings of previous systematic reviews and meta-analyses in low and middle-income countries that concluded that dysmenorrhea has a statistically significant negative effect on academic performance both in school and during higher education [23-28].

Conclusions

In conclusion, the present study revealed significant relationships between dysmenorrhea and student's age, menstrual irregularities, medications use, and COVID-19 infection. Moreover, the study demonstrated highly statistically significant relationships between dysmenorrhea, learning difficulties, and poor interpersonal relationships among Iraqi university students during the COVID-19 pandemic. Future studies need to focus on improving pain and symptoms management strategies to reduce the effects of dysmenorrhea so that young women can optimize their educational and future life opportunities.

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to responsible for all the aspects of this work.

Conflict of Interest

We have no conflicts of interest to disclose.

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