

Dysmenorrhea and its Effects among Female Students at Health Colleges in Najran University, Saudi Arabia: A Cross-sectional Study

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ABSTRACT

Introduction: Dysmenorrhea is referred as to pain during menstruation and is the most common menstrual disorder among women who present to clinicians.

Objectives: The aim of this study was to assess the prevalence of dysmenorrhea and its effects on the quality of life of female students at health colleges in Najran University, Najran, Saudi Arabia.

Methods: This descriptive, cross-sectional study was conducted at Najran University. The participants were students at health colleges in Najran, Saudi Arabia. Data were collect using a self-administered questionnaire designed for this study. Data were analysed using the Statistical Package for Social Sciences version 23.

Result: A total of 194 students responded. The prevalence of dysmenorrhea was 93.3%, with 136 students (70.1%) reporting regular cycles and 158 (81.4%) reporting a moderate level of menstruation. The most common symptoms of moderate and severe dysmenorrhea were abdominal pain (67/194, 34.5% and 62/194, 32%, respectively) followed by fatigue (64/194, 33% and 60/194, 30.9%, respectively). The condition significantly affected college attendance, and was associated with loss of concentration, low mood and mood change, anger, nausea and loss of appetite ($P=0.0001$).

Conclusion: Our study showed a high prevalence of dysmenorrhea among students in in health colleges. The most common menstrual symptoms associated with severe dysmenorrhea were abdominal pain, fatigue, mood change, reduced college attendance and crying. Thus, clinics to diagnose and manage dysmenorrhea among female student are urgently required.

Keywords: Prevalence; Dysmenorrhea; Quality of life; Menstruation

Abbreviations: BMI: Body Max Index; DM: Diabetes Mellitus

INTRODUCTION

Menstruation is the monthly breakdown of the uterine lining due to hormones produced by the hypothalamus, pituitary, and ovaries [1]. The normal duration of cycle ranges from 21-35 days with a median of 28 days [2]. The normal amount of blood loss during the menstrual cycle is 20-80 ml [3]. Dysmenorrhea (primary and secondary) refers to pain during menstruation and is the most common menstrual disorder of women who present to clinicians. Unlike primary dysmenorrhea, secondary dysmenorrhea is associated with pelvic pathology [4-6]. The prevalence of dysmenorrhea has been reported to range from 15.8% to 89.5% [7-13], with approximately 20% describing the condition as severe [14].

Dysmenorrhea has a significant impact on the daily activity, social relationships and psychological status of women affected by this condition. Studies in Hong Kong showed that 60%-90% of adolescents who suffered from dysmenorrhea reported restricted daily activity and school absenteeism [15]. A study conducted among nursing students in Saudi Arabia showed that 96.5% of participants had dysmenorrhea, with 35.8% suffering from severe dysmenorrhea [16]. Nevertheless, another study in Saudi Arabia showed the prevalence of dysmenorrhea was 60.4% [17]. Another study conducted in Ethiopia showed that 66.8% of participants suffered from dysmenorrhea, with 60.4% reporting loss of concentration and class absenteeism [18].

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Received: January 10, 2020; **Accepted:** January 22, 2020; **Published:** January 29, 2020

Citation: Alshahrani MS (2020) Dysmenorrhea and its Effects among Female Students at Health Colleges in Najran University, Saudi Arabia: A Cross-sectional Study. J Women's Health Care 9:484. doi:10.35248/2167-0420.20.9.484.

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Thus, dysmenorrhea is an important disorder in women that has a marked impact on their interactions with family, friends and daily activity. Therefore, in this study, we evaluated the prevalence of dysmenorrhea and its effects on the life of female students at health colleges in Najran (Saudi Arabia) to raise awareness of the diagnosis and management.

The aim of study was to assess the prevalence of dysmenorrhea and its effects on life of female students at health colleges and to identify the relationship between dysmenorrhea and their effects in quality of life in female students at health colleges.

METHODS AND PARTICIPANTS

This descriptive, cross-sectional study was conducted at Najran University during November 2019. The participants were students at health colleges (Medical College, Nursing College and Applied Medical Sciences-Radiology Department) in Najran, Saudi Arabia. This study received ethical approval from the Research Committee of the College of Medicine, Najran University, Najran, Saudi Arabia and all the data were kept anonymous and confidential. Participants were recruited from the student population at health colleges at Najran University and all those who agreed to participate were included in this study. I calculate all students before distribution of the questionnaires. 194 students responded from a total of 240 to questionnaires distributed. Then after distribution missing paper due to either not to reply to me or they were not available in college at that time because they had session in hospital.

An anonymous, self-administered questionnaire was designed in English and translated into Arabic for this research. Two independent experts reviewed all items in the questionnaire to confirm the content validity. The questionnaire was pre-tested for validity with 18 samples to test word of questionnaire. These 18 samples were not included in the main study. The internal consistency was tested using Kurder Richardson 20 (KR-20) the answers scores (Yes/No). KR-20 for all domains was 0.58. The questionnaire consisted of 32 questions designed to obtain information about the socio-demographic characteristics, menstrual history, pain during menstruation, severity of pain associated with

dysmenorrhea, symptoms associated with dysmenorrhea and the impact of dysmenorrhea in the lives of the participants. After explaining the aim of the study, the questionnaire distributed to the students. Data were collected over two weeks during lectures, after exams and in the corridors of the colleges. The students in the study provided verbal consent before filling the questionnaire. All the data were entered into a Microsoft Excel spread sheet and double-checked and analysed using chi-square (χ^2) and Cramer's V tests with the Statistical Package for Social Science version 23.0 (SPSS Inc., Chicago, IL, USA). $P < 0.05$ was considered to indicate statistical significance.

RESULTS

A total of 194 students responded from a total of 240 to questionnaires distributed. The demographic characteristics of the participants are shown in Table 1. Among these students, 165(85.1%) were aged from 20-25, 92(47.4%) where from Nursing College, 62(32%) from the Radiology Department and 40(20%) from the Medical College. In terms of marital status, 176 students (90.7%) were single and 145 students (74.7) had a monthly income of less than 7,000 riyals.

As shown in Table 2, 77 students (39.7%) had an ideal weight in terms of body max index (BMI) and 182 students (93.8%) were free from medical conditions. In total, 134 students (69.1%) suffered from moderate to severe forms of dysmenorrhea. One hundred and thirty-six students (70.1%) had regular cycles and 158(81.4%) reported moderate amounts of menstruation.

Table 3 shows that the majority of participants (80%) had symptoms associated with menstruation consisting of abdominal pain, back pain, fatigue, mood change, anxiety and anger. Menstruation affected the daily activities of 145(74.6%) participants and 135(69.6%) reported crying during menstruation. Furthermore, 121(61.4%) participants suffered from symptoms of depression.

As shown in Table 4, a significantly positive relationship between dysmenorrhea and menstrual history was identified by Cramer's V and χ^2 analysis. A very highly significant relationship between the duration of menstruation and dysmenorrhea was also identified

Table 1: Descriptive statistics for demographic characteristics.

Demographic Characteristics	N	Percentage (%)
Age(years)		
<20	27	13.9
20-25	165	85.1
>25	2	1
College		
Medicine	40	20.6
Nursing	92	47.4
Radiology	62	32
Marital status		
Single	176	90.7
Married	17	8.8
Divorced	1	0.5
Monthly income(Riyals)		
<7,000	145	74.7
7,000-15,000	26	13.4
>15,000	11	5.7

Table 2: Descriptive statistics for menstruation related signs and risk factors.

Related signs and risk factors	N	Percentage (%)
BMI (kg/m²)		
<18	14	7.2
18-24.9	77	39.7
25-29.9	16	8.2
30-34.9	8	4.1
35-39.9	3	1.5
Medical condition		
None	182	93.8
DM	1	0.5
Another	11	5.7
Age at menarche (years)		
<11	13	6.7
12-14	132	68
15-17	42	21.6
>17	5	2.6
Length of cycle (days)		
<21	47	24.2
21-25	143	73.7
>35	4	2.1
Regularity of cycle		
Yes	136	70.1
No	58	29.9
Days of menstruation		
<3	10	5.2
3-7	169	87.1
>7	15	7.7
Level of menstruation		
Little	17	8.8
Moderate	158	81.4
Excessive	19	9.8
Pain during mensuration		
None	13	6.7
Low	47	24.2
Moderate	70	36.1
Severe	64	33

Table 3: Descriptive statistics for menstruation associated symptoms.

Associated symptoms	N	Percentage (%)
Abdominal pain		
Yes	172	88.7
No	22	11.3
Back pain		
Yes	169	87.1
No	25	12.9
Breast pain		
Yes	110	56.7
No	84	43.3
Leg pain		
Yes	102	52.6
No	92	47.4
Nausea		

Yes	108	55.7
No	86	44.3
Loss of appetite		
Yes	117	60.3
No	77	39.7
Headache		
Yes	107	55.2
No	87	44.8
Fatigue		
Yes	168	86.6
No	25	12.9
Mood change		
Yes	168	86.6
No	26	13.4
Anxiety		
Yes	156	80.4
No	38	19.6
Anger		
Yes	156	80.4
No	38	19.6
Loss of concentration		
Yes	111	57.2
No	83	42.8
Depression		
Yes	121	62.4
No	73	37.6
Crying		
Yes	135	69.6
No	59	30.4
Loneliness		
Yes	117	60.3
No	77	39.7
Affects social life		
Yes	58	29.9
No	136	70.1
Affects relationships with friends		
Yes	50	25.8
No	144	74.2
Affects college attendance		
Yes	109	56.2
No	85	43.8
Affects exam performance		
Yes	74	38.1
No	120	61.9
Affects daily activities		
Yes	145	74.7
No	49	25.3

(χ^2 (N=194)=20.597a, P=0.002 and medium effect size, Cramer's V (N=194)=0.326, P=0.002), in which the highest proportion of cases of moderate and severe dysmenorrhea occurred in participants who reported a duration of menstruation between 3 and 7 days (66/194, 34% and 53/194, 27.3%, respectively). The amount of menstruation also showed a highly significant association with dysmenorrhea (χ^2 (N=194)=35.608a, P=0.0001 and a medium

effect size, Cramer's V (N=194)=0.303, P=0.002), in which the highest proportion of moderate and severe dysmenorrhea occurred in participants who reported a moderate amount of menstruation (66/194, 34% and 46/194, 23.7%, respectively).

As shown in Table 5, a significantly positive relationship between dysmenorrhea and symptoms associated with menstruation

Table 4: Relationship of dysmenorrhea with other risk factors for menstruation (N=194).

Related signs and risk factors	Dysmenorrhea								χ^2		Cramer's V	
	No		Low		Moderate		Severe		Value	P V	Value	P V
	N	%	N	%	N	%	N	%				
BMI (kg/m²)												
<18	0	0	1	0.5	8	4.1	5	2.6	20.436a	0.156	0.187	0.156
18-24.9	6	3.1	15	7.7	24	12.4	32	16.5				
25-29.9	0	0	3	1.5	7	3.6	6	3.1				
30-34.9	0	0	3	1.5	3	1.5	2	1				
35-39.9	0	0	0	0	3	1.5	0	0				
Medical condition												
None	12	6.2	46	23.7	64	33	60	30.9	3.339a	0.765	0.093	0.765
DM	0	0	0	0	1	0.5	0	0				
Another	1	0.5	1	0.5	5	2.6	4	2.1				
Age at menarche												
<11	2	1	1	0.5	4	2.1	6	3.1	12.900a	0.376	0.149	0.376
12-14	10	5.2	34	17.5	48	24.7	40	20.6				
15-17	1	7.7	10	21.3	16	22.9	15	23.4				
>17	0	0	2	1	0	0	3	1.5				
Length of cycle												
<21	4	2.1	12	6.2	16	8.2	15	7.7	4.374a	0.626	0.106	0.626
21-25	9	4.6	34	17.5	54	27.8	46	23.7				
>35	0	0	1	0.5	0	0	3	1.5				
Regularity of cycle												
Yes	10	5.2	31	16	52	26.8	43	22.2	1.518a	0.678	0.088	0.678
No	3	1.5	16	8.2	18	9.3	21	10.8				
Days of menstruation												
<3	3	1.5	4	2.1	2	1	1	0.5	20.597a	0.002	0.326	0.002
3-7	10	5.2	40	20.6	66	34	53	27.3				
>7	0	0	3	1.5	2	1	10	5.3				
Amount of menstruation												
Little	4	2.1	8	4.1	2	1	3	1.5	35.608a	0.0001	0.303	0.0001
Moderate	9	4.6	37	19.1	66	34	46	23.7				
Excessive	0	0	2	1	2	1	15	7.7				

*Cramer's V: Small effect=0.1, Medium effect=0.3, Large effect=0.5

** χ^2 test is significant at P ≤ 0.05 and non-significant at P ≥ 0.05

Table 5: Relationship of dysmenorrhea with menstruation related symptoms (N=194).

Associated symptoms	Dysmenorrhea								χ^2		Cramer's V	
	No		Low		Moderate		Severe		Value	P V	Value	P V
	N	%	N	%	N	%	N	%				
Abdominal pain												
Yes	4	2.1	39	20.1	67	34.5	62	32	52.602a	0.0001	0.521	0.0001
No	9	4.6	8	4.1	3	1.5	2	1				
Back pain												
Yes	7	3.6	40	20.6	62	32	60	30.9	15.628a	0.001	0.284	0.001
No	6	3.1	7	3.6	8	4.1	4	2.1				
Breast pain												
Yes	5	2.6	25	12.9	38	19.6	42	21.6	4.240a	0.237	0.148	0.237
No	8	4.1	22	11.3	32	16.5	22	11.3				
Leg pain												
Yes	3	1.5	16	8.2	37	19.1	46	23.7	20.574a	0.0001	0.326	0.0001
No	10	5.2	31	16	33	17	18	9.3				

Nausea												
Yes	3	1.5	15	7.7	41	21.1	49	25.3	27.902a	0.0001	0.379	0.0001
No	10	5.2	32	16.5	29	14.9	15	7.7				
Loss appetite												
Yes	2	1	17	8.8	46	23.7	52	26.8	34.980a	0.0001	0.425	0.0001
No	11	5.7	30	15.5	24	12.4	12	6.2				
Headache												
Yes	3	1.5	24	12.4	36	18.6	44	22.7	10.902a	0.012	0.237	0.012
No	10	5.2	23	11.9	34	17.5	20	10.3				
Fatigue												
Yes	5	2.6	39	20.1	64	33	60	30.9	38.786a	0.0001	0.447	0.0001
No	7	3.6	8	4.1	6	3.1	4	2.1				
Mood change												
Yes	5	2.6	40	20.6	61	31.4	62	32	31.887a	0.0001	0.405	0.0001
No	8	4.1	7	3.6	9	4.6	2	1				
Anxiety												
Yes	4	2.1	30	15.5	47	24.2	52	26.8	13.947a	0.003	0.268	0.003
No	9	14.8	17	27.9	23	37.7	12	19.7				
Anger												
Yes	4	2.1	36	18.6	57	29.4	59	30.4	26.455a	0.0001	0.369	0.0001
No	9	4.6	11	5.7	13	6.7	5	2.6				
Loss of concentration												
Yes	2	1	23	11.9	38	19.6	48	24.7	19.123a	0.0001	0.314	0.0001
No	11	5.7	24	12.4	32	16.5	16	8.2				
Depression												
Yes	2	1	26	13.4	46	23.7	47	24.2	16.898a	0.001	0.295	0.001
No	11	5.7	21	10.8	24	12.4	17	8.8				
Crying												
Yes	2	1	24	12.4	54	27.8	55	28.4	35.640a	0.0001	0.429	0.0001
No	11	5.7	23	11.9	16	8.2	9	4.6				
Loneliness												
Yes	2	1	26	13.4	43	22.2	46	23.7	15.063a	0.002	0.279	0.002
No	11	5.7	21	10.8	27	13.9	18	9.3				
Affects social life												
Yes	2	1	13	6.7	13	6.7	30	15.5	14.505a	0.002	0.273	0.002
No	11	5.7	34	17.5	57	29.4	34	17.5				
Affects relationships with friends												
Yes	1	0.5	12	6.2	13	6.7	24	12.4	8.721a	0.033	0.212	0.033
No	12	6.2	35	18	57	29.4	40	20.6				
College attendance												
Yes	2	1	21	10.8	37	19.1	49	25.3	22.428a	0.0001	0.34	0.0001
No	11	5.7	26	13.4	33	17	15	7.7				
Exam performance												
Yes	3	1.5	11	5.7	23	11.9	37	19.1	16.901a	0.001	0.295	0.001
No	10	5.2	36	18.6	47	24.2	27	13.9				
Daily activity												
Yes	4	2.1	26	13.4	56	28.9	59	30.4	34.050a	0.0001	0.419	0.0001
No	9	4.6	21	10.8	14	7.2	5	2.6				

*Cramer's V: Small effect=0.1, Medium effect=0.3, Large effect=0.5

** χ^2 test is significant at $P \leq 0.05$ and not significant at $P \geq 0.05$

were identified by Cramer's V and χ^2 analysis. There was a very highly significant relationship between abdominal pain and dysmenorrhea (χ^2 (N=194)=52.602a, P=0.0001) and a high effect size (Cramer's V (N=194)=0.521, P=0.0001), in which the highest proportion of moderate and severe dysmenorrhea occurred in participants who reported abdominal pain (67/194, 34.5% and 62/194, 32%, respectively). There was a very highly significant relationship between fatigue and dysmenorrhea (χ^2 (N=194)=38.786a, P=0.0001) and high effect size (Cramer's V (N=194)=0.447, P=0.0001), in which the highest proportion of moderate and severe dysmenorrhea occurred in participants who reported fatigue (64/194, 33% and 60/194, 30.9%, respectively).

DISCUSSION

Dysmenorrhea is one of the most common disorders affecting women's during menstruation and occurs mainly in adolescents. This condition can have a marked impact on various aspects of life from daily activities to social relationships. In the present study, we investigated the prevalence of dysmenorrhea and its effects on the lives of female students at health colleges. Our study showed that the prevalence of dysmenorrhea among the participants was 93.3%, with 73.7% reporting a normal length of cycle from 21-35 days, 87.1% reporting duration of menstruation from 3-7 days and 81.4% having a moderate amount of menstruation. Thus, these data demonstrate that the majority of participants in this study experienced dysmenorrhea. In a similar study in Saudi Arabia, the prevalence of dysmenorrhea was 96.5% [16]. Moreover, a study at Jouf University showed a prevalence of dysmenorrhea of 87.7%, [19]. However, other studies conducted in Saudi Arabia showed a prevalence of dysmenorrhea of 57% and 60.9%, which was lower than that observed in our study [17,20].

The worldwide prevalence of dysmenorrhea ranges from 15.8% to 89.5%, which is slightly high in our study [7-13]. It can be speculated that the variations in the reports of prevalence are due to diversity in the types of study, and culture as well as differences in the descriptions of dysmenorrhea and the ability to tolerate pain among the participants.

The severity of dysmenorrhea also varies in different studies. In our study, 33% of student with dysmenorrhea were classified if as severe, which was consistent with the findings from a study conducted by Jouf University (approximately 34%) [19] and a similar study from Saudi Arabia (38.6%) [17]. In contrast, another study in Saudi Arabia showed that severe dysmenorrhea occurred with a prevalence of 21.6% [20]. In accordance with other study international, more than 50% of women had moderate dysmenorrhea [5]. In contrast, in Egypt, the severity of dysmenorrhea was reported to be 14.8%, which is lower than the proportion of participants in the present study [10].

In our study, we showed that dysmenorrhea was significantly associated with menstruation-related symptoms, which impacted on the lives of and academic performance of affected students. However, the highest percentage of moderate and severe dysmenorrhea occurred participants who reported abdominal pain (67/194, 34.5% and 62/194, 32%, respectively), followed by fatigue (64/194, 33% and 60/194, 30.9%, respectively), with these symptoms of dysmenorrhea significantly affecting the daily lives of students (56/194, 28.9% and 59/194, 30.4%, respectively; P=0.0001). Dysmenorrhea was also significantly associated with loss of concentration, crying, mood change, anger, nausea and loss of appetite (P=0.0001). In the attending to exam it was less impact

comparing with previous with (P=0.001), this explain to the rules of college about rest exam. These findings are consistent with those of other studies [19-24].

CONCLUSION

Our study showed a high prevalence of dysmenorrhea among students in health colleges in Najran University, which is consistent with the findings of similar international studies. The main symptoms related to menstruation that were impacted by severe dysmenorrhea were abdominal pain, fatigue, mood change, college attendance and crying. Thus, clinics to diagnose and manage dysmenorrhea among female students as well as programs to increase the knowledge and awareness of the condition are urgently required.

LIMITATION OF STUDY

First, this study was conducted among students at health colleges and did not include all university students. Second, since the participants were all university students our results may not reflect the general population in Najran City.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval for this study was obtained from the research committee at the College of Medicine, Najran University, prior to this study.

CONFLICT OF INTEREST

The author has no conflict of interest to declare.

ACKNOWLEDGMENTS

Author would like to thank Dr. Mosa Bahnes, assistant professor at Najran University for help with data analysis and eScianta (www.escianta.com) for English language editing.

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