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Prevalence, impact and self-care practice of dysmenorrhea among female university students in Saudi Arabia

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ABSTRACT

Objective: To estimate the prevalence of dysmenorrhea among female University students at Jazan University, impact and self-care in Saudi Arabia.

Methods: A cross-sectional exploratory study was conducted among 335 students in Jazan University, selected through a multistage stratified random sampling technique. Data was collected using an online survey adopted from a previous study (AL Ghamdi, 2019) after taking permission from the author. It consists of socio-demographic information, menstrual history, lifestyle, and self-care practice. The intensity of menstrual pain scored the severity of pain was assessed by the Multidimensional Scoring System of Andersch and Milsom developed by (Moghadam & Khosravi, 2012).

Results: The prevalence of dysmenorrhea was 69.69%. The prevalence of severe dysmenorrhea was 29.73 %. 63.4% used painkiller, and it interferes with the daily activity of 165 students (49%). Decreased social activities were the most common psychological impact (56.7%). The pain intensity positively correlated with classroom performance, exam performance, assignment performance, and extracurricular activity performance.

Conclusions: Dysmenorrhea, as a condition, is a universal problem among teenage girls; the current studies revealed a relatively high prevalence of this condition among female university students. The symptom and the severity have direct impacts on students' daily life. However, socio-demographic factors, lifestyle, and personal habits showed no relation with the severity of dysmenorrhea. Simultaneously, the menstrual characteristics and history had a connection to the severity of the symptoms. Early intervention for pain management can minimize the impact of the symptoms on the population.

Keywords: *Prevalence, Dysmenorrhea, student, classroom performance*

INTRODUCTION

Dysmenorrhea is one of the most reproductive disorders that affect young women, and the most affected age group is 18-45 years (Iacovides et al., 2015). Dysmenorrhea refers to health disorders associated with menstruation that disrupts everyday's life activity, such as stomach pain, cramping, and backache. Affected women typically experience sharp, intermittent, and spasmodic pain localized in the suprapubic zone. Pain can radiate to the legs or the lower back. During menstruation, mood swings, exhaustion, headache, nausea, and edema are dysmenorrhea comorbidities (De Sanctis et al., 2016; Harada, 2013). The pain lasts from several hours before a few hours when the menstrual bleeding begins (De Sanctis et al., 2016). Dysmenorrhea is commonly divided into two types based on their cause. Primary Dysmenorrhea (PD) is menstrual pain without a specific disease. Nevertheless, if the menstrual pain is associated with a known disorder, it is considered Secondary Dysmenorrhea (SD). The secondary causes of dysmenorrhea are endometriosis, fibroids, adenomyosis, endometrial polyps, pelvic inflammatory disease, and the use of an intrauterine device (Proctor & Farquhar, 2006).

Dysmenorrhea manifested by several symptoms such as lower abdominal pain, swollen breast, abdominal distention, headache, nausea and vomiting, back pain or leg pain, experiencing anger during menstruation, and feeling depressed. Discomfort is attributed to an excessively high output of prostaglandins in the uterine wall during the ovulatory cycle. Prostaglandins trigger myometrial contraction, vasoconstriction of the small vessels of the uterine wall (Vlachou et al., 2019).

Dysmenorrhea could influence the female's ability to perform her daily activities. The degree of this impact will be different based on pain intensity and pain tolerance. Pain intensity may lead to absence from work or school, and if this absenteeism happens monthly, this will lead to poor performance in school or work (Abdel-Salam et al., 2018).

The prevalence of dysmenorrhea has been discussed in several research studies, and there was a significant difference between the prevalence between cultures. In the USA, the prevalence was 85%, while India was 40.7% only(Banikarim et al., 2000; Singh et al., 2008). In Saudi Arabia, two studies discuss the Prevalence of Dysmenorrhea. The first study conducted in Jeddah in 2013 states that the Prevalence of Dysmenorrhea was 60.9%. The other study conducted in Northern Province in 2018 estimated that the Prevalence of Dysmenorrhea was 87.7% (Ibrahim et al., 2015). There is a vast difference in the Prevalence of Dysmenorrhea, even in the same country. These differences have never been explained, but they may be related to certain factors that cannot be measured. It is overlapping and subjectivity like variations between populations' lifestyles.

Nonpharmacological and self-care practices, such as physical exercise, are the best method that females use to reduce pain intensity during dysmenorrhea. It also helps to reduce the volume and rate of bleeding, along with its effect on reducing the number of drugs consumed during Dysmenorrhea (Mahvash et al., 2012). Using the traditional method to reduce pain like herb and spice has been popular among female in a different culture (Aksu & Sevgi, 2016)

Use of medication by self-care practice of dysmenorrhea by the students under to condition with or without consulting a Doctor. In most cases, nonsteroidal anti-inflammatory drugs (NSAIDs) and Anti-Inflammatory drugs are the best medication for treating dysmenorrhea, as proven by a meta-analysis of 35 randomized controlled trials in 2015 (Marjoribanks et al., 2015). On the other side, most of the females didn't know about the adverse effect of the drugs they were taking and the proper dose (Gebeyehu et al., 2017). The study will focus on the prevalence, impact, and self-care of dysmenorrhea among the female students, health and non-health colleges at Jazan University.

Problem statement

Affected women who consider pain a regular part of the menstrual cycle often disregard dysmenorrhea. Thus, many women fail to report their pain to the physician who treated them—the consequences of untreated dysmenorrhea range from class absenteeism to family and personal disruption. Therefore, dysmenorrhea affects the untreated person and the family, social, and national economics as well. Local studies, especially among university students exploring dysmenorrhea, its impact, and self-care in Southern provinces in Saudi Arabia, are scarce,

J Popul Ther Clin Pharmacol Vol 30(4):e573–e592; 14 March 2023.

as concluded by (Ibrahim et al., 2015). There is a need for further research, and it would be interesting to see the prevalence and impact of dysmenorrhea among female university students in Japan. This study's findings can serve as a guide to health care providers who want to design a practical, systematic, and menstrual health education program for female adolescents.

Significance of the Study

Saudi census of 2017 revealed that females in age between 18 to 25 represent almost two million, making 10 % of all the population in the country. "Identifying the possible health problem of such a big part of the population should be a priority because those females represent the future human power of our nation" (Ibrahim et al., 2015). Symptoms of Dysmenorrhea and its severity will have negative consequences on students' achievement (Abdel-Salam et al., 2018), finding that most of the students who participate in their study report negative impact symptoms academic performance.

Dysmenorrhea is a significant public health problem among University students and is attributed to school absenteeism and poor quality of life. Approximately 10-15% of females experience monthly menstrual pain that is intense enough to interrupt everyday life at home or college. The effects of pain during menstruation have been reduced by including various pharmacological and nonpharmacological methods, including nonsteroidal anti-inflammatory drugs (NSAIDs), herbal, dietary, yoga, meditation, and acupuncture (Yesuf et al., 2018).

In modern life, young females have access to pain medication, and there is no control over the prescription of NSAIDs. In several studies investigating pain management among the students, they report using NSAIDs without counseling doctors and sometimes without knowing the probable dose and possible adverse effects. Studies show that NSAIDs can sometimes have side effects such as stomach problems, nausea, headaches, or drowsiness as experienced by women with Dysmenorrhea (Marjoribanks et al., 2015; Yesuf et al., 2018). Relevant bodies should put more effort into assessing and educating the students about the medication and its possible side effects. (Armour et al., 2019; Jaafarpour et al., 2015). Maternity nurses should be more aware of the impact of the severity of the symptoms and how they can help young women obtain better choices to manage their symptoms and improve their health for the long term (Fernández-Martínez et al., 2019).

Aim

This study aims to estimate the Prevalence of Dysmenorrhea among female university students at Jazan University and its impact and self-care practice. This aim will be achieved through the following objectives:

- To estimate the Prevalence of Dysmenorrhea among the female students in Jazan University.
- To assess the characteristics and impact of dysmenorrhea on female student's health status and academic performance.
- To identify the most common self-care practice of menstrual pain by female university students.
- Relationship between socio-demographic factors and the Prevalence of Dysmenorrhea

Questions of the study

- What is the Prevalence of Dysmenorrhea among the female students in Jazan University?
- What are the characteristics and impacts of dysmenorrhea on female Students' health status and academic performance?
- What is the most common self-care practice of dysmenorrhea among female students in Jazan University?
- What is the relationship between socio-demographic factors and the Prevalence of Dysmenorrhea?

Conceptual definition

Prevalence

Prevalence is the proportion of a population with a specific characteristic in a given period (Kenneth J, 2012).

Dysmenorrhea

Dysmenorrhea (primary) refers to spasmodic colicky pain or discomfort associated with menstruation. Although not a severe medical problem, the term describes an adolescent

woman girl with menstrual symptoms severe enough to keep her from functioning for a day or two each month (Osayande & Mehulic, 2014).

Self-care

Is defined as practicing activities that individuals initiate and perform to themselves to maintain life, health, and wellbeing (Riegel et al., 2019)

Operational definition

Impact

The severity of the symptoms of dysmenorrhea leads to the inability to perform daily activity, educational performance, social entertainment, and mental stress.

Self-care practice

fill in four categories: exercise, medication, hot fermentation, and rest

Dysmenorrhea

The prevalence of dysmenorrhea was measured based on the severity of pain that girls experience every month.

The conceptual framework of the study

A conceptual framework previously done by Martínez et al. (2019), to investigate similar concepts to the current research, guided this study. The current study investigates the prevalence of dysmenorrhea, impact, and self-care practice among female University students in Jazan. There are factors such as socio-demographic data, personal habits/lifestyle, and history of the reproductive problem, menstrual characteristics, and pain intensity. Those factors identified from the literature review independently impacted the severity of menstrual symptoms, academic performance (classroom performance, exam performance, assignment performance, and extracurricular activities performance), the severity of dysmenorrhea, physical and psychological state, and daily activity. The impact of dysmenorrhea is determined by its effect on the student's academic performance, social life, ability to perform daily activity, and common self-care practice.

MATERIAL AND METHODS

Design

Use of the quantitative cross-sectional exploratory design to assess the prevalence, impact, and self-care practice of dysmenorrhea among female University students in Jazan.

Study setting

The study was carried out at Jizan University. The study participants were from four colleges: nursing, medical, business administration, and computer Science College.

Population and sampling

The study population

The target population includes all female students who enrolled in the designated colleges. According to the Jizan University website, the researcher calculated the target population to the following categories. The Nursing College includes 864 students, and Medical College includes 507 students. Business Administration College includes 3477 students, and Computer Science College includes 1792 students. Therefore, the target population is 6640 students. The sample calculated using Raosoft Sample Size Calculator (Raosoft, 2016) with critical value at 95%, population proportion, P=50% = 0.50, confidence level, Z = 1.96 and margin of error, e = 5% or 0.05. The sample size is 364. Upon adding 10% of the sample size, the final sample size became 400 female students for possible nonresponse. The aim of selecting this sitting is to meet students from different backgrounds with different levels of health knowledge and ensure our sample's diversity.

Study participants were contacted through email. According to the following inclusion criteria, during the corona pandemic, sampled collected data from students in the chosen college who agreed to participate in the study had to be ≥ 18 years old, single, able to use email, and willing to participate in the study. Based on our calculation of the target population, 6640 students, the sample size was 400. The response rate was 83%. The total number of participants was 345 students, but ten participants were excluded due to incompetence and mistakes in their responses. The total number of participants in the study was 335.

J Popul Ther Clin Pharmacol Vol 30(4):e573–e592; 14 March 2023.

Exclusion Criteria: - Student from college not been listed in our sitting

The sample subject

A multistage stratified random sampling technique was used to select study participants: first stage: sampling from health and non-health college was selected randomly by toss method (2 colleges from health and two from non-health college), second stage: sampling from each selected college based on appropriate proportion of the respective field of study (20%). According to the following table:

Total number of students	Sample size
• Nursing college N= 864	• n=48
• Medicine college N= 507	• n= 28
• computer since college N = 1792	• n= 99
• Business Administration N = 3477	• n=191

Study instrument

Two online tools collected data: The first tool was developed by (AL Ghamdi, F. 2019); after taking permission from the author, the reliability and validity of the instrument were tested and prepared. The second tool is pain measurement using the Multidimensional Scoring System of Andersch and Milsom developed by (Moghadam & Khosravi 2012). (Appendix C)

Instrument parts

Data was collected using an online questionnaire and adapted from a previous study (AL Ghamdi, F. 2019); after taking permission from the author, the instrument's reliability and validity were tested and prepared. It includes data about socio-demographic data, personal habits/lifestyle, history of the gynecological problem, menstrual History, dysmenorrhea History, and impact of dysmenorrhea on five subscales classroom performance, exam performance, assignments performance, extracurricular activities performance, and severity of dysmenorrhea.

The intensity of menstrual pain was assessed by the Multidimensional Scoring System of Andersch and Milsom developed by (Moghadam & Khosravi 2012). The grading system ranges from grade 0 to 3 for evaluating the severity of dysmenorrheal.

Grade 0 Menstruation is not painful, and daily activity is unaffected Grade 1 Mild. Menstruation is painful but seldom inhibits normal activity; analgesics are seldom required; Grade 2 Moderate. Daily activity is affected; analgesics required and give sufficient relief, so that absence from school is unusual. Grade 3 Severe. Activity inhibited; poor analgesics; negative symptoms (headache, fatigue, vomiting, and diarrhea).

Validity reliability and validity

A pilot study is an essential step in the research process to recognize possible problems and lacks the study tools and protocol before implementation throughout the comprehensive research (Kraemer et al., 2006; Lancaster et al., 2004).

A pilot study conducted before data collection included 10% of 364 female students, 37 participants. The participants in the pilot did not include in the study sample. Pilot study data ease calculating the validity and reliability of the study tool.

The face validity of study instrument

To evaluate the face validity of the study tools, the researcher requests five experts in maternity nursing in nursing college KSU to evaluate the suitability of the study tool. After the review, the experts made some suggestions, and the researcher executed them.

The internal validity of study tools

The internal validity of the tools assesses by calculating the Pearson correlation in each subscale by calculation each statement on that scale with its total score. Impact of Dysmenorrhea on five subscales classroom performance 0.724, exam performance0.848, assignments performance0.808, extracurricular activities performance0.829, and severity of dysmenorrhea 0.736. The Pearson correlation at

a level of (95%) (p-value less than 0.01) .Reliability of the study instrument was 0.89

Data collection procedure

The data collection was carried out to achieve the study purpose. The first step in the data collection process was requesting approval from the tool. One author (Alghamdi et al., 2019) used the current study tool. After receiving approval, the researcher applied to the ethical committee of scientific research to issue the IRP (appendix B). After IRP was obtained, the researcher contacted the previously mentioned colleges to get their approval to start data collection in their facilities. As protective measures, all the universities were closed in March 2020. The researcher integrated the questionnaire into an online service to create a survey. The researcher used the GOOGLE form to do the survey. The survey was in the Arabic language. Following that, the researcher contacted the colleges to send the survey to the students by email. The report was sent to the students through the mail in all selected colleges. The collection of the participant's responses started in June 2020 until October 2020. Then the researcher received the response through email and data analysis began

Data analysis

Following the compilation of data collection, the data were checked for missing value then entered into an excel file to be coded and analyzed. The data was coded based on their type, whether it is continuous or categorical. For the continuous variables, it would be entered as a number. The categorical variables were classified; each one would have a specific coding number. BMI variable needed further calculation, entering only the participant's height and weight. The investigator calculated the Body Mass Index based on that information, using the BMI formula: Weight/Height in meters.

After calculating BMI, the participant score was labeled based on BMI classification, underweight = <18.5, normal weight = 18.5–24.9, overweight = 25–29.9, and obesity = BMI of 30 or greater. Following that, the investigator entered the data into the Statistical Package of Social Science (SPSS) version 25 to perform the statistical analysis. For continuous variables, the mean ± Standard Deviation (SD) was used to calculate the result. The method used total numbers and percentages for categorical variables to analyze the data to examine the relationship between the variables using the inferential statistic. The researcher uses inferential statistics to explore the relationship between the study variables. There is tow test used to assess the relationship between Chi-Square variables and one way ANOVA.

Ethical consideration

The team maintained ethical consideration all through the research processes. The investigator applied all the required measures to ensure the study following the ethical guidelines. Before data collection, the team obtained all the required permission. Frist Permission was from the tool one author. The research had the approval of the Deanship of Graduate Studies on the study proposal. After that, the researcher applied to have IRP from the ethical committee of scientific research. When building the online survey, the first page contained an explanation about the study purpose for the participants. It clarified to the participant that they were free to participate or not in the study, and their participation was kept confidential. Investigator downloaded all the participant's responses to a flash drive, and the data kept in a secure location for five years.

RESULTS

TABLE 1: Social demographic characters of the study participants

social demographic characters		f	%
Age	Less than 19 years	18	5.4%
	19-24 years	301	89.9%
	More than 24	16	4.8%
Accommodation	With family	323	96.4%
	alone	10	3.0%
	In a compound	2	0.6%
Collage	Nursing college	66	19.8%

	Medicine collage	106	31.7%
	Computer science college	64	19.2%
	Business administration college	98	29.3%
University level	First	27	8.1%
	Second	12	3.6%
	Third	48	14.3%
	Fourth	33	9.9%
	Fifth	58	17.3%
	Sixth	43	12.8%
	Seventh	47	14.0%
	Eighth	67	20.0%
Level of income	Less than 5000	231	69.0 %
	5000 SR to 10000 SR	57	17.0 %
	More than 10000	47	14.0 %
Place of Residence	North region	8	2.4%
	South region	312	93.1%
	East region	4	1.2%
	West region	9	2.7%
	The middle region	2	0.6%
Mother education	Not educated	57	17.0%
	Read and write	27	8.1%
	Primary	41	12.2%
	Elementary school	38	11.3%
	High school	48	14.3%
	Collage	116	34.6%
	Postgraduate study	8	2.4%
Father education	Not educated	19	5.7%
	Read and write	18	5.4%
	Primary	27	8.1%
	Elementary school	43	12.8%
	High school	98	29.3%
	Collage	112	33.4%
	Postgraduate study	18	5.4%
BMI	Underweight	72	23.2%
	Normal	154	49.5%
	Overweight	39	12.5%
	Obese	46	14.8%
GPA	A+	89	26.6 %
	A	76	22.7 %
	B+	68	20.3 %
	B	55	16.4 %
	C+	29	8.7 %
	C	14	4.2 %
	D	4	1.2 %

Table 1. Most of the student (n=301, 89.9%) were between 19 and 24 years old, and most of them (n=323, 96.4%) living with their family. Most of the students (n=121, 64.7%) were from the South region of the KSA. More than half of the student had less than 5000 as monthly income (n=231, 69.0 %).The students had varied BMI levels: underweight (n=72, 23.2%), normal (n=154, 49.5%), overweight (n=39, 12.5%) and Obese (n=46, 14.8).

TABLE 2: Lifestyle and Personal Habits of the participant

Personal Habits/Lifestyle		n	%
Smoking	Never	325	97.3%
	Less than 5/day	5	1.5%
	5-10/day	2	0.6%
	More than 10/day	2	0.6%
Exercise	Never	123	36.8%
	Less than three times a week	125	37.4%
	Three times a week	54	16.2%
	More than three times a week	32	9.6%
Caffeine consumption	Never	73	21.9%
	Less than 3 cups/day	215	64.6%
	3-5 cups/day	33	9.9%
	More than 3-5 cups/day	12	3.6%
Eating fruits and vegetables	Never	97	29.0%
	One time a day	192	57.5%
	Two times a day	38	11.4%
	Three times or more/day	7	2.1%
Drinking water	Less than 1.5 L / Day	158	47.7%
	1.5-2 L / Day	153	46.2%
	More than 2 L / Day	20	6.0%
Having Breakfast	Yes	76	22.8%
	Some days	229	68.8%
	Never	28	8.4%
*Exposure to stress during academic Year	Never	85	25.4%
	Exam days	51	15.2%
	Academic activity days	13	3.9%
	All the year	39	11.6%
	Clinical days	296	90.0%
	Assignment submission days	10	3.0%

*More than one response

Table 2 showed that most of the student did not smoke (n= 325, 97.3%), and only one-third of the student did not do exercise (n=123, 36.8%). The Caffeine consumption among student was 64.6%. Around half of the participants, 57.5%, report eating fruits and vegetables once daily. The drinking water less than 1.5 L was 47.7% among the students.

TABLE 3: Menstrual History among study participants

Menstrual History		n	%
Age of Menarche	Less than 12	92	27.5%
	12 -16	231	69.0%
	More than 16	12	3.6%
Character of Menstruation	Regular	194	58.4%
	Not regular	138	41.6%
The interval between the menstruation cycle	Less than 21 days	73	21.9%
	21- 35 days	212	63.5%
	More than 35 days	49	14.7%
Duration of menstruation	Less than three days	17	5.1%
	3-7 days	273	81.5%
	More than seven days	45	13.4%
The amount of blood in menstruation	Light	29	8.7%
	Moderate	254	75.8%
	Heavy	52	15.5%

Number of pads/days	Less than four pads/day	115	34.3%
	4-8 pads/day	200	59.7%
	More than eight pads/day	20	6.0%

Table 3 illustrates the Menstrual History among study participants. Tow third of the study participant had the age of menarche between 12 - 16 (n=231, 69.0%), and 58.4% had regular menstruation. The interval between menstruation cycle more than half (n= 212, 63.5%) reports their cycle 21- 35 days. The amount of blood in menstruation was moderate in (n=254, 75.8%).

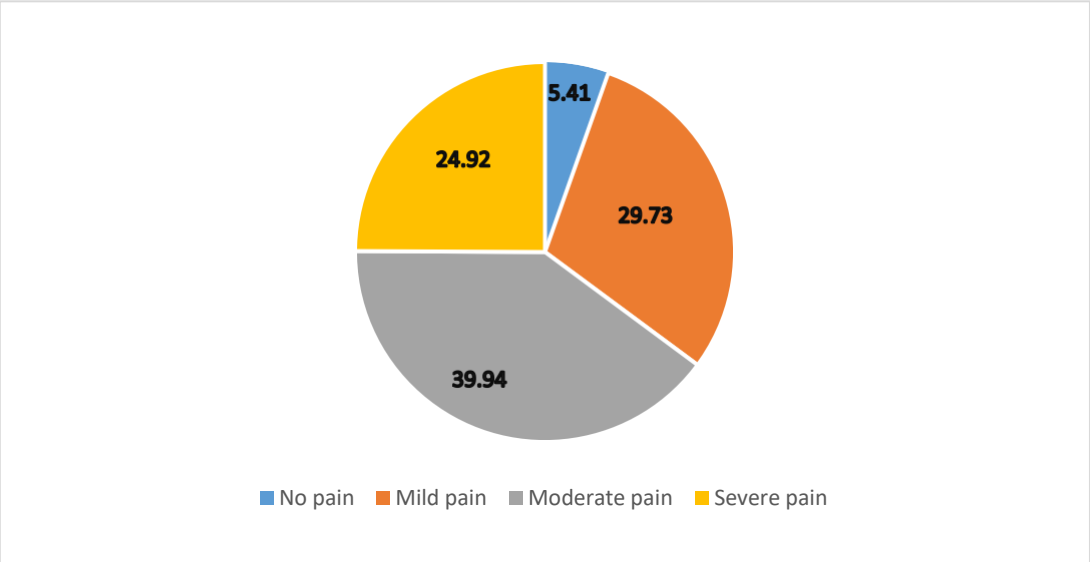

FIGURE 1: Grade of menstrual pain intensity.

The prevalence of dysmenorrhea among the participant was varied. Only 5.41 % stated they did not suffer from pain during menstruation. 29.73 % of the participant stated they suffer from mild pain only. The rest of the participants stated that they have moderate to severe pain during menstruation.

TABLE 4: Characteristics of Dysmenorrhea and experience among the study participants

Dysmenorrhea History and experience		n	%
occurrence of dysmenorrhea	with the first menstrual cycle	124	37.0%
	After one or two years of starting the menstrual cycle	125	37.3%
	After more than three years of my first menstrual cycle	86	25.7%
dysmenorrhea diagnosed	Never been diagnosed	294	87.8%
	Primary Dysmenorrhea	26	7.8%
	Secondary Dysmenorrhea	6	1.8%
	Diagnosed but not informed which type	9	2.7%
The onset of pain during menstruation	The day before the menstrual cycle	141	42.1%
	First day of the menstrual cycle	120	35.8%
	The second day of the menstrual cycle	21	6.3%
	Every day of the menstrual cycle	53	15.8%
Duration of Dysmenorrhea	Less than one day	63	18.8%
	One day to two days	184	54.9%
	Three days and more	88	26.3%
Site of menstrual pain	Lower abdomen	159	47.5%

	Lower Back	53	15.8%
	Legs	32	9.6%
	Pelvic pain	24	7.2%
	pain in more than one site	67	20.0%
Used of Pain killer during menstrual pain	Never	110	32.8%
	Sometime	143	42.7%
	Always	82	24.5%
Frequency of taking Painkiller	1	149	63.4%
	2	77	32.8%
	3	7	3.0%
Type of medication	paracetamol	129	62.0%
	Nonsteroidal anti-inflammatory drugs	79	38.0%

Table 4. Showed dysmenorrhea History and experience among the study participants. More than two-thirds of dysmenorrhea occurrence was within the first two years of the first menstrual cycle. Of most of the students, 87.8% of dysmenorrhea never been diagnosed. The onset of pain was reported by the student (n=141, 42.1%) on the day before the menstrual cycle. Half of the participants (54.9%) reported duration of dysmenorrhea for one day to two days. During the menstrual cycle, the site of pain reported by the student was the lower abdomen (n= 159, 47.5%). Used of Pain killer sometimes during menstrual pain reported by students was (n=143, 42.7%). The type of medication was paracetamol among (62 %) of students.

TABLE 5: Impact of Dysmenorrhea on physical and psychological wellbeing

The impacts		n	%
Physical symptoms	Never	68	20.3%
	Diarrhea	33	9.9%
	Constipation	12	3.6%
	Vomiting	45	13.4%
	Headache	5	1.5%
	Dizziness	83	24.8%
	Other	44	13.1%
	sleepiness	14	4.2%
	all the symptoms	31	9.3%
Daily activities	Never interferes	14	4.2%
	Sometimes interfere	156	46.6%
	Always interferes	165	49.3%
psychological impact	Increase weight	16	4.8%
	Decrease weight	20	6.0%
	Feeling inferiority	0	0.0%
	Sleep disturbance	31	9.3%
	Depressed mood	19	5.7%
	Decreased social activities	190	56.7%
	Conflicts with others	59	17.6%
	Other	0	0.0%

Table 5 showed the impact of menstrual pain on daily activities reported by around half of the participant always interferes with daily activities (n=165, 49.3%). More than half of the participants (56.7%) reported decreased social activities as the impact of dysmenorrhea on physical and psychological wellbeing.

TABLE 6: Impact of Dysmenorrhea on academic performance

Impact of Dysmenorrhea	Mean (SD)	Variance	Min	Max
Classroom performance.	8.11(3.13)	9.805	.00	14.0
Impact of Dysmenorrhea on the exam.	5.31(2.77)	7.673	.00	12.0
Impact of Dysmenorrhea on assignments.	2.25(1.57)	2.492	.00	6.0
impact of dysmenorrhea on extracurricular activity's	2.49(1.39)	1.867	.00	4.0
The severity of your dysmenorrhea increase.	5.07(2.55)	6.551	.00	10.0

Table 6 showed the impact of dysmenorrhea on academic performance. The impact on classroom performance was relatively high. On the other hand, the impact on exams and assignments was low. The impact on extracurricular activity's severity of your dysmenorrhea increase was high too.

TABLE 7: Correlation between the impact of dysmenorrhea on academic performance and Grade of the pain intensity

Impact of Dysmenorrhea on academic performance		Grade of the pain intensity
classroom performance	r	.518**
	p	.000
Impact of Dysmenorrhea on your exam performance	r	.375**
	p	.000
Impact of Dysmenorrhea on your assignment's performance	r	.170**
	p	.002
impact of dysmenorrhea on your extracurricular activity's performance	r	.328**
	p	.000
The severity of your dysmenorrhea increase	r	.283**
	p	.000

*Significant level P <0.05

Table 7 shows a positive correlation between the overall score of the impact of dysmenorrhea and the Grade of the pain intensity.

TABLE 8: The correlation between classroom performance and the Grade of the pain intensity

		Grade of the pain intensity				Spearman's rho	p
		No Pain	Mild	Moderate	Severe		
Reduced concentration	Never	4	8	4	0	.353**	0.00
	Sometimes	9	60	55	22		
	Always	5	31	74	61		
College Absenteeism	Never	6	41	23	2	.404**	0.00
	Sometimes	10	50	86	47		
	Always	2	8	24	34		
Class Absenteeism	Never	5	38	25	6	.330**	0.00
	Sometimes	10	52	83	44		
	Always	3	9	25	33		
Clinical practice absenteeism	Never	7	40	34	8	.299**	0.00
	Sometimes	7	47	72	41		
	Always	4	12	27	34		

Difficulty in remembering the lectures	Never	9	35	25	8	.313**	0.00
	Sometimes	6	54	78	44		
	Always	3	10	30	31		
Decreased participation in class	Never	6	7	6	0	.366**	0.00
	Sometimes	9	64	58	25		
	Always	3	28	69	58		
Having a warning letter due to absenteeism	Always	5	14	3	3	.390**	0.00
	Never	11	67	72	28		
	Sometimes	2	18	58	52		

Correlation is significant at the 0.01 level (2-tailed).

Table 8 showed a positive correlation between classroom performance and the Grade of the pain intensity.

TABLE 9: Impact of Grade of the pain intensity on academic performance.

		Grade of the pain intensity				Spearman's rho	p
		No Pain	Mild	Moderate	Severe		
Exam days	Never	7	18	14	6	.254**	0.00
	Sometimes	5	66	76	39		
	Always	6	15	43	38		
Ordinary academic days	Never	5	24	18	10	.189**	0.00
	Sometimes	9	61	87	45		
	Always	4	14	28	28		
Assignments submission days	Never	6	15	8	1	.245**	0.00
	Sometimes	7	62	69	33		
	Always	5	22	56	49		
Clinical days	Never	11	81	101	43	.212**	0.00
	Sometimes	5	13	19	24		
	Always	2	5	13	16		
Extracurricular activities days	Never	11	49	43	16	.242**	0.00
	Sometimes	3	41	64	39		
	Always	4	9	26	28		

Correlation is significant at the 0.01 level (2-tailed).

Table 9 showed a positive correlation between severity of dysmenorrhea increase and the Grade of the pain intensity.

TABLE 10: Self-care practice of menstrual pain among study participants

Self-care practice		n	%
Methods used to relieve dysmenorrhea.	Rest	123	36.7%
	Breathing exercise	8	2.4%
	Drink herbals	69	20.6%
	Medication	65	19.4%
	Warm compress	61	18.2%
	Yoga	2	0.6%

	Visit emergency room	7	2.1%
Use of herbals	cinnamon	111	41.1%
	ginger	48	17.8%
	green tea	87	32.2%
	other	24	8.9%
Sources of information	Family	143	42.8%
	Doctors	27	8.1%
	Nurses	3	0.9%
	Friends	23	6.9%
	Internet search	116	34.7%
	Social Media	8	2.4%
	University	8	2.4%
	Books or/and magazine	6	1.8%
	Other	0	0.0%
college services that can help to manage dysmenorrhea	Restroom	14	4.2%
	Internal clinic	24	7.2%
	Pain management course	1	0.3%
	Not applicable	135	40.5%
	Yoga	0	0.0%
	Pads	9	2.7%
	I do not know	149	44.7%
	Other	1	0.3%
Action when Dysmenorrhea onset at college / university	Go home	165	49.4%
	Go to hospital	17	5.1%
	Rest at college's resting room	33	9.6%
	Asking help from friends	81	24.2%
	Leave the class	104	31.0%
	Asking help from teachers	11	3.3%
	Do nothing	41	12.2%

Table 10. Showed self-care practice of menstrual pain among study participants Methods used to relieve dysmenorrhea was varied among participants was rest, herbs, and medication, respectively. Cinnamon is the most come type of herbs that used to relieve pain. The sources of information of the methods used to relieve dysmenorrhea were family and Internet search. Student action when dysmenorrhea onset at college/university was going home (n=165, 49.4%) and leaving the class was the action of (n=104, 31.0%).

TABLE 11: Relationship between socio-demographic factors and the prevalence of dysmenorrhea

social demographic characters		Grade of the pain intensity				p
		No pain	Mild	Moderate	Severe	
Age	Less than 19 years	0	7	4	6	0.20
	19-24 years	16	88	120	76	
	More than 24	2	4	9	1	
Accommodation	With family	17	95	131	78	0.23
	alone	1	4	2	3	
	In a compound	0	0	0	2	
Collage	Nursing college	5	10	32	19	0.07
	Medicine collage	5	30	38	32	

	Computer science college	5	25	23	10	
	Business administration college	3	34	39	22	
University level	First	2	7	8	10	0.06
	Second	0	6	4	2	
	Third	1	20	13	14	
	Fourth	5	9	12	7	
	Fifth	0	18	26	14	
	Sixth	5	9	21	8	
	Seventh	0	15	19	12	
	Eighth	5	15	30	16	
Level of income	Less than 5000	11	59	100	60	0.07
	5000 SR to 10000 SR	5	18	19	15	
	More than 10000	2	22	14	8	
Place of Residence	North region	0	4	1	3	0.70
	South region	18	91	123	78	
	East region	0	0	3	1	
	West region	0	3	5	1	
	The middle region	0	1	1	0	
Mother education	Not educated	4	14	26	13	0.88
	Read and write	1	6	11	9	
	Primary	4	11	14	11	
	Elementary school	1	16	14	6	
	High school	1	16	18	13	
	Collage	7	34	47	28	
	Postgraduate study	0	2	3	3	
Father education	Not educated	0	6	6	7	0.149
	Read and write	3	4	5	6	
	Primary	3	6	8	10	
	Elementary school	3	18	14	8	
	High school	0	29	45	23	
	Collage	8	30	48	25	
	Postgraduate study	1	6	7	4	
BMI	Underweight	2	22	22	26	0.21
	Normal	11	40	70	32	
	Overweight	2	10	18	9	
	Obese	2	17	15	12	

Table 11 showed no relationship between socio-demographic factors and the prevalence of dysmenorrhea among the study participants.

DISCUSSION

In the current study, only 24.92 % of females suffered from severe pain during menstruation, while only 5.41 % experienced no pain during menstruation. Martinez et al in 2018 demonstrated that there is a 74.8 % prevalence of dysmenorrhea among female students of the University of Spain (Fernandez-Martínez, et al., 2018). Another study conducted in 2016 explained that there is about 80 % prevalence of dysmenorrhea among female students of Hong Kong University (Chia et al., 2013). The results of these two studies are very different from the current study.

The study shows that in about 87.8 % of females, dysmenorrhea has never been diagnosed, and about 54.9 % of female students reported pain during the menstrual cycle for one to two days. A study performed in 2020 depicted a high proportion of students who experienced pain during their monthly cycle (Tekalign & Daba, 2020). The group also evaluated the academic performance of female students during the menstrual cycle, and the findings of this study showed that their performance is low during exams and assignments. At the same time, it is high during a class activity. Tekalign and Daba elucidated in a study that 50.6 % of females show

poor performance in academics, and students lack concentration during lectures due to increased severity of pain during menstruation (Tekalign & Daba, 2020).

During the menstrual cycle, pain is also very important to note while taking a history of dysmenorrhea. A recent study illustrates that 47.5 % of females experience abdominal pain during the menstrual cycle, while 15.8 % of females reported pain. Azagew et al. in 2020 carried out a study. The study's researchers reported that 50.7 % of female students in Northwest Ethiopia experienced abdominal pain, and 25.8% of females have complained of back pain (Azagew et al., 2020). It was cleared that there is a minor difference in the findings irrespective of the site of pain during the menstrual cycle after comparing previous and recent results.

In the current study, no association has been found between the onset of the menstrual cycle (menarche) and dysmenorrhea. The study shows that 69.0 % of females have menarche between 12 to 16 years, and about 58.4 % had their regular menstrual cycle. Noipayak et al. investigated that 52.6 % of the female students experienced menarche at the age of 10 to 16 years; the findings of this study are slightly different from the current study (Noipayak et al., 2017).

Furthermore, the study shows that dysmenorrhea has a significant effect on females' psychological wellbeing, interfering with daily activities. This study shows that about 49.3 % of participants complain that pain during the menstrual cycle always interferes with activities. It was also reported by 56.7 % of study participants (females) about decreased social activities. A study conducted by Vlachou et al. (2019) described that 24.8 % of females reported depression during the menstrual cycle, and 43.8 % of study respondents experienced feelings of anger and mental stress during menstruation (Vlachou et al., 2019).

The relationship between the intensity of pain and performance of students during exams and in extracurricular activities was observed during this research. No association was observed between the Grade of the intensity of pain and submission of assignment within the due date. Moreover, a correlation has been seen among female students regarding the pain intensity and extracurricular activities. A positive relation between exam performance and grades of pain intensity was also reported in the study. On the other hand, research carried out by Armour et al. in 2019 explained that there is a great prevalence of dysmenorrhea among females, due to which female students have to suffer a lot, particularly in academic activities as well as in extracurricular activities. The findings of this study also depicted that females who experienced dysmenorrhea have a significant negative effect on academic performance and extracurricular performance (Armour et al., 2019).

Females do various self-care practices for managing the pain during the menstrual cycle. Such practices include rest, medication, and herbs. This study shows that most study participants use such practices for relieving pain, and it was explored that 36.7 % of study females used the rest for relieving pain during the menstrual cycle. One study conducted in 2019 by Armour demonstrated that 55 % of women used self-care practices for relieving pain during menstruation, and only 48 % of females used analgesics for relief of pain (Armour et al., 2019).

Various other factors are also studied in this research related to dysmenorrhea, such as lifestyle factors. The recent study has elaborated on several factors which have an impact during menstruation. These include smoking, exercise, caffeine, and mental stress. The study elucidated that all factors have a strong correlation with dysmenorrhea. Such results were also observed in a study performed in 2018 by Yesuf for demonstrating the association between different lifestyle factors or personal habits of study participants, including alcohol drinking and poor or broken personal relationships (Yesuf et al., 2018).

Hence, we can conclude from the above discussion that dysmenorrhea is a prevalent disease, although its dominance has been found less in the current study than in another study. Furthermore, the study's findings have depicted that socio-demographic factors such as age have no direct relation with dysmenorrhea. However, it has been reported in a recent study that dysmenorrhea has negative impacts on academic performance. Moreover, females to relieve pain during menstruation have used several self-care practices. Various physical and psychological symptoms related to dysmenorrhea have been reported in the current research.

CONCLUSION AND RECOMMENDATIONS

The prevalence of dysmenorrhea among students at the University of Jazan was moderate, but it significantly influenced their academic performance. The education of post-menarche women and the general population is crucial to ensure that dysmenorrhea is no longer seen as a common female experience. Students should also be informed about the proper use of drugs for the successful relief of dysmenorrhea. Physician counseling must be promoted to the population to support women who have dysmenorrhea issues. Studies that are more comprehensive should be carried out among other groups of the population to understand its prevalence and its effects at individual and social levels. Therefore, university students should be encouraged to engage in daily physical activity programs. Furthermore, school officials and instructors should inform of dysmenorrhea's issues to offer psychological and academic assistance to dysmenorrhea-affected students through a tutorial class. Besides, health professionals working in the University's student clinic can develop a health education initiative to mobilize the university population to improve students' lifestyles. Maternity nurses can apply the research finding to tailor better education intervention for college students. It can also help identify the impact of pain on students' academic performance and consider this when creating a care plan for students who suffer from dysmenorrhea.

Limitations

Despite the careful design of the study, limitations are inevitable. The data collection performed using an online survey, which may create some recall biases when completing the survey. The study participants were almost from the same community, limiting the generalization of findings to the entire population.

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Conflict of Interest

The authors have no conflict of interest to declare.

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Author Contributions

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