

Dysmenorrhea Characteristics and Self-Care Method used among Female Nursing Students at King Abdulaziz University

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Abstract: Background: Dysmenorrhoea is a common gynaecological problem that affects women and has a detrimental impact on their lives. However, women seldom seek medical advice and prefer self-care methods to manage their dysmenorrhoea. Identifying the self-care methods used to manage the pain and the source of information related to self-care methods used among dysmenorrhoeal nursing students would assist health care providers in devising an intervention to improve students' health. Methods: A cross-sectional study was conducted from 1st of March up to the end of April in 2018 to identify the characteristics of dysmenorrhoea and the self-care methods used among female nursing students at King Abdulaziz University in Jeddah. Data were collected from 194 participants using self-administered questionnaires. Results: More than half of respondents (60%) complained of moderate menstrual pain followed by severe pain (22%). The majority of respondents (73.7%) experienced cramping pain in the lower abdomen (89.7%), beginning with menstrual flow (50.1%) and lasting one to two days (64.8%). Nausea (52.1%), dizziness (47.9%) and headaches (45.9%) were the most prominent dysmenorrhoea symptoms. The most common method used to relieve dysmenorrhoea was rest (86.6%) followed by a warm compress (67.0%). Ibuprofen was the most common medication used to manage dysmenorrhoea (22.2%), while the most common herb used was cinnamon (39.2%). Family was the main source of information on the methods used for 80.9% of the respondents. Conclusions: The nursing students used various methods to relieve their menstrual pain, including pharmacological and non-pharmacological methods; most students used a combination of both. Safe self-care methods use should be a priority in dysmenorrhoeal nursing student's education.

Keywords: Dysmenorrhea, Characteristics, Self-Care Methods, Nursing Students

1. Introduction

Dysmenorrhoea is one of the most common gynaecological disorders among women of reproductive age [1]. With dysmenorrhoea, the monthly menstrual cycle is accompanied by a level of pain that requires medication and may limit daily activities [2]. Affected women describe menstruation pain as painful cramping and an intermittent spasmodic sensation in the lower abdomen that may radiate to the back of the legs or the lower back [3]. In addition, accompanied biological symptoms possibly occur just before or during the menses flow, such as nausea, vomiting,

headaches, sweating and diarrhoea [2]. Pain usually begins several hours before and a few hours after the onset of the menstrual flow [4]. The symptoms peak with the onset of blood flow and usually last less than a day, while the pain may remain for two or three days [3].

Despite the frequency and severity of the disorder, most women with dysmenorrhoea do not seek medical treatment or consult health care professionals [5]. Women consider painful periods as normal conditions that they can handle using different self-care methods, including pharmacological and/or non-pharmacological treatments [6, 7]. These methods have been used to lessen the effects of dysmenorrhoea, such

as taking paracetamol, nonsteroidal anti-inflammatory drugs (NSAIDs), herbal, hot compression, exercise and massage [6, 8].

Conducting a study among nursing students to assess their menstrual pain and the self-care methods they use is crucial to provide appropriate diagnosis, treatment and education. Thus, health care providers (HCPs) will be able to implement the recommendations derived from this study's results to better train and support female nursing students in dealing with this common women's health problem. The current study aimed to identify the characteristics of dysmenorrhoea and the self-care methods used to relieve pain among nursing students at King Abdulaziz University (KAU), Jeddah, Kingdom of Saudi Arabia (KSA).

2. Methods

A descriptive, cross-sectional study was conducted from 1st of March up to the end of April in 2018 at KAU's Faculty of Nursing. The study used a purposive sample that included female bachelor nursing students in the academic year of 2017–2018 who had dysmenorrhoea and were willing to participate. The researcher developed an anonymous, self-administered structured questionnaire in English. The tool was developed based on a comprehensive review of the relevant literature. The questionnaire included the verbal multidimensional scoring system (VMS) to assess dysmenorrhoea severity.

Ethical approval was obtained from the Faculty of Nursing at KAU. Participants received written informed consent that outlined the study's objectives and stated that participation was voluntary; participants could withdraw from the study at any stage if they desired. A total of 194 questionnaires were received. The collected data were entered and analysed using PSS version 24.0. Descriptive and inferential statistics were employed to determine the association between different variables, and *P* values less than 0.05 and 95% confidence interval were used as cut-off points to determine the statistical significance of associations among different variables.

3. Results

The majority of the respondents ($n=189$, 97.4%) were between 19 and 24 years old, and a similar percentage (97.9%) were single and living with family ($n=183$, 94.8%). Two thirds of the respondents ($n=121$, 64.7%) were from the western region of the KSA. The students were from varied academic levels: second ($n=64$, 33.0%), third ($n=79$, 40.7%) and fourth year ($n=51$, 26.3%). Table 1 reveals the socio-demographic data.

Table 1. Socio-Demographic Data.

Factors	Descriptive Statistics	
	n	%
Age group		
Less than 19 Years	4	2.1
19 – 24 Years	189	97.4
Above 24 Years	1	0.5
Marital Status		
Single	190	97.9
Married	4	2.1
Residency		
With family	183	94.8
Dormitory	6	3.1
Alone	4	2.1
Academic Year		
Second	64	33.0
Third	79	40.7
Fourth	51	26.3
Origin Region		
North	9	4.8
South	21	11.2
East	24	12.8
West	121	64.7
Central	12	6.5

Figure 1 shows that more than half of the participants ($n=117$, 60.4%) reported suffering from moderate dysmenorrhoea, while ($n=42$, 21.6%) reported suffering from severe symptoms.

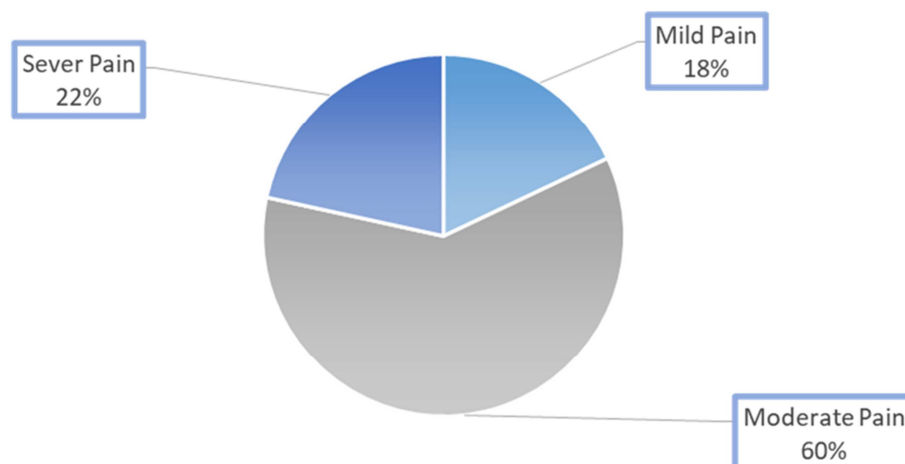


Figure 1. Severity of Dysmenorrhea.

Table 2 illustrates that different pain symptoms associated with menstruation the respondents reported; the most common are nausea (n=101, 52.1%), dizziness (n=93, 47.9%), headaches (n=89, 45.9%) and diarrhoea (n=77, 39.7%). Other reported symptoms include fatigue, sweating, shivering, photosensation, breast tenderness, hypotension, tachycardia, bone pain, fever and chills (n=27, 13.9%). Menstrual pain occasionally interfered with daily activities for (n=133, 68.5%) of the respondents and (n=82, 42.2%)

sometimes used a painkiller.

There is a significant association between dysmenorrhoea severity with painkiller use and inability to practice activities ($p \leq 0.001$). Table 2 presents the distribution of dysmenorrhoea severity with associated symptoms of menstrual pain. According to the chi-squared test, there is a significant association between dysmenorrhoea severity with the number of associated symptoms such as nausea, diarrhoea, vomiting and dizziness.

Table 2. Dysmenorrhea assessment.

Dysmenorrhea Assessment		Severity of Dysmenorrhea			C.C.	P – Value
		Mild n (%)	Moderate n (%)	Severe n (%)		
Impact of Menstrual Pain	Never interferes with activity	8 (4.1)	2 (1.0)	1 (0.5)	0.503	0.000**
	Sometime interferes with it	26(13.4)	93 (47.9)	14 (7.2)		
	Always interferes with activity	1 (0.5)	22 (11.3)	27 (13.9)		
Pain Killer Used	Never	21(10.8)	49 (25.3)	5 (2.6)	0.475	0.000**
	Sometimes	14 (7.2)	55 (28.4)	13 (6.7)		
	Always	-	13 (6.7)	24 (12.4)		
Nausea	No	21 (10.8)	63 (32.5)	9 (4.6)	--	0.000**
	Yes	14 (7.2)	54 (27.8)	33 (17.0)		
Diarrhea	No	26 (13.4)	73 (37.6)	18 (9.3)	--	0.015*
	Yes	9 (4.6)	44 (22.7)	24 (12.4)		
Constipation	No	32 (16.5)	104 (53.6)	34 (17.5)	--	0.344
	Yes	3 (1.5)	13 (6.7)	8 (4.1)		
Associated symptoms	Vomiting	33 (17.0)	92 (47.4)	18 (9.3)	--	0.000**
	Yes	2 (1.0)	25 (12.9)	24 (12.4)		
Headache	No	25 (12.9)	59 (30.4)	21 (10.8)	--	0.078
	Yes	10 (5.2)	58 (29.9)	21 (10.8)		
Dizziness	No	29 (14.9)	57 (29.4)	15 (7.7)	--	0.000**
	Yes	6 (3.1)	60 (30.9)	27 (13.9)		
Other	No	28 (14.4)	99 (51.0)	34 (17.5)	--	0.770
	Yes	7 (3.6)	18 (9.3)	8 (4.1)		
	Yes	5 (2.6)	3 (1.5)	-		

* Significant correlation at < 0.05 level (2-taild). ** Significant correlation at the ≤ 0.001 level (2-taild).

Table 3 illustrates that over half of the respondents (n=99, 51.3%) first experienced their dysmenorrhoea with the onset of menarche. More than two thirds of the respondents (n=178, 91.8%) had never been diagnosed with dysmenorrhoea.

Half of the respondents (n=98, 50.5%) reported that pain started the first day of menstruation; for (n=125, 64.8%), this pain lasted one to two days. of the respondents. Moreover, more than two thirds of the respondents (n=174, 89.7%) reported menstrual pain located in the lower abdomen, and (n=144, 74.2%) reported pain in the lower back. Regarding

the pain type, (n=143, 73.7%) of the respondents reported cramping pain with their menstruation, while (n=3, 1.5%) reported a burning sensation in their lower abdomen.

According to the chi-squared test, there is a significant association between dysmenorrhoea severity and dysmenorrhoea duration ($p \leq 0.001$), pain in the lower abdomen ($p=0.020$), lower back pain ($p=0.018$) and sharp pain ($p=0.004$). However, there is no significant association between dysmenorrhoea severity, the first occurrence of dysmenorrhoea and the onset of pain during menstruation.

Table 3. Dysmenorrhea history.

Dysmenorrhea History		Severity of Dysmenorrhea			C.C.	P – Value
		Mild n (%)	Moderate n (%)	Severe n (%)		
1 st Occurrence Dysmenorrhea	With onset of menarche	19 (9.8)	59 (30.6)	21 (10.9)	0.120	0.589
	1 – 2 years after onset	10 (5.2)	41 (21.2)	18 (9.3)		
	More than 2 years after onset	6 (3.1)	16 (8.3)	3 (1.6)		
	Day before menstrual cycle	14 (7.2)	53 (27.3)	13 (6.7)		
Onset of Pain	1 st day of menstrual cycle	17 (8.8)	54 (27.8)	27 (13.9)	0.152	0.324
	2 nd day of menstrual cycle	4 (2.1)	10 (5.2)	2 (1.0)		
Duration of	Less than one day	16 (8.3)	10 (5.2)	6 (3.1)	0.393	0.000**

Dysmenorrhea History			Severity of Dysmenorrhea			C.C.	P – Value
			Mild n (%)	Moderate n (%)	Severe n (%)		
Dysmenorrhea	One day to two days		18 (9.3)	85 (44.0)	22 (11.4)		
	Three days and more		1 (0.5)	21 (10.9)	14 (7.3)		
Cramping	No		9 (4.6)	25 (12.9)	17 (8.8)	--	0.057
	Yes		26 (13.4)	92 (47.4)	25 (12.9)		
Type of Pain	Sharp	No	31 (16.0)	85 (43.8)	23 (11.9)	--	0.004*
		Yes	4 (2.1)	32 (16.5)	19 (9.8)		
Dull	No		30 (15.5)	109 (56.2)	35 (18.0)	--	0.149
	Yes		5 (2.6)	8 (4.1)	7 (3.6)		
Other	No		34 (17.5)	116 (59.8)	41 (21.1)	--	0.762
	Yes		1 (0.5)	1 (0.5)	1 (0.5)		
Lower abdomen	No		8 (4.1)	10 (5.2)	2 (1.0)	--	0.020*
	Yes		27 (13.9)	107 (55.2)	40 (20.6)		
Lower back	No		14 (7.2)	31 (16.0)	5 (2.6)	--	0.018*
	Yes		21 (10.8)	86 (44.3)	37 (19.1)		
Site of Pain	Legs	No	21 (10.8)	75 (38.7)	19 (9.8)	--	0.105
		Yes	14 (7.2)	42 (21.6)	23 (11.9)		
Pelvic pain	No		26 (13.4)	73 (37.6)	20 (10.3)	--	0.055
	Yes		9 (4.6)	44 (22.7)	22 (11.3)		
Other sites	No		33 (17.0)	104 (53.6)	34 (17.5)	--	0.189
	Yes		2 (1.0)	13 (6.7)	8 (4.1)		

* Significant correlation at < 0.05 level (2-tailed). ** Significant correlation at the ≤ 0.001 level (2-tailed).

Table 4 reveals that the most common methods respondents used to relieve dysmenorrhoea are rest (n=168, 86.6%), a warm compress (n=130, 67.0%) and visiting the emergency unit (n=13, 6.7%). The other methods reported are drinking warm chocolate milk, watching movies, sleeping, massaging the area of pain, sitting in a quiet room and listening to the

Qur'an (n=9, 4.6%). More than half of the respondents (n=101, 52.1%) used medication and (n=123, 63.4%) drank herbal beverages. According to the chi-squared test, there was a significant association between dysmenorrhoea severity and the methods used to relieve the pain, excluding rest, breathing exercises, yoga, sleep and massage.

Table 4. Methods used to relieve the menstrual pain.

Methods used		Severity of Dysmenorrhea			P – Value
		Mild n (%)	Moderate n (%)	Severe n (%)	
Rest	No	6 (3.1)	16 (8.2)	4 (2.1)	0.640
	Yes	29 (14.9)	101 (52.1)	38 (19.6)	
Warm compress	No	19 (9.8)	36 (18.6)	9 (4.6)	0.006*
	Yes	16 (8.2)	81 (41.8)	33 (17.0)	
Breathing exercise	No	30 (15.5)	103 (53.1)	39 (20.1)	0.624
	Yes	5 (2.6)	14 (7.2)	3 (1.5)	
Drink herbals	No	21 (10.8)	32 (16.5)	15 (7.7)	0.002*
	Yes	14 (7.2)	85 (43.8)	27 (13.9)	
Medication	No	20 (10.3)	58 (29.9)	8 (4.1)	0.001*
	Yes	15 (7.7)	59 (30.4)	34 (17.5)	
Visit ER	No	34 (17.5)	116 (59.8)	31 (16.0)	0.000**
	Yes	1 (0.5)	1 (0.5)	11 (5.7)	
Yoga	No	34 (17.5)	114 (58.8)	40 (20.6)	0.841
	Yes	1 (0.5)	3 (1.5)	2 (1.0)	
Other	No	33 (17.0)	112 (57.7)	40 (20.6)	1.000
	Yes	2 (1.0)	5 (2.6)	2 (1.0)	

* Significant correlation at < 0.05 level (2-tailed). ** Significant correlation at the ≤ 0.001 level (2-tailed).

Figure 2 reveals that the most common medications used to relieve dysmenorrhoea are Brofen (n=43, 22.2%) and Panadol (n=33, 17.0%), while the most common herbs used to relieve menstrual pain are cinnamon (n=76, 39.2%), mint (n=55, 28.4%) and ginger (n=37, 19.2%).

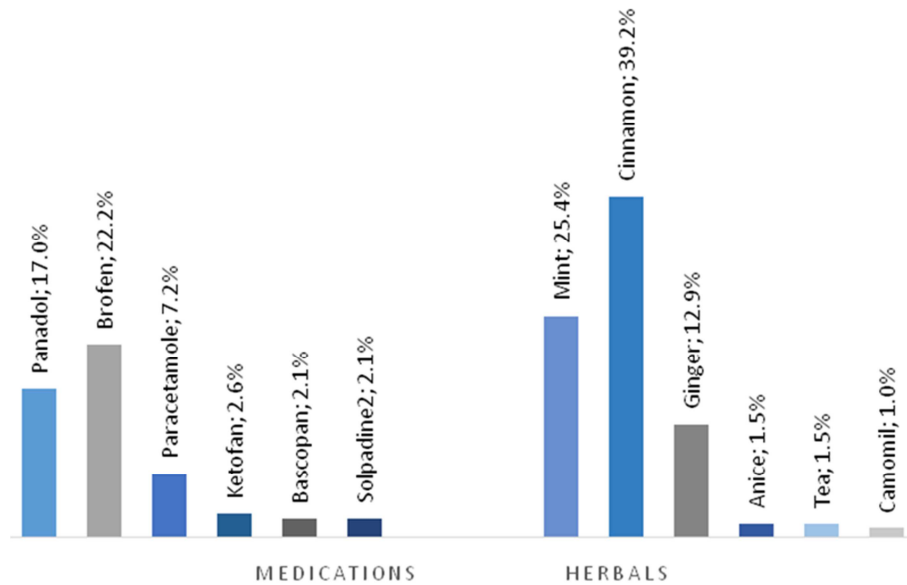


Figure 2. Medication and herbs used to relieve the menstrual pain.

Figure 3 shows the respondents' information sources for the method they use to alleviate menstrual pain. The main reported sources are family (n=157, 80.9%) and friends (n=76, 39.2%). Less than a quarter of the students sourced

their information from doctors (n=6, 13.4%), nurses (n=24, 12.4%) or university (n=31, 16.0%). Additional sources include social media (n=65, 33.5%) and the respondents' own experiences (n=11, 5.7%).

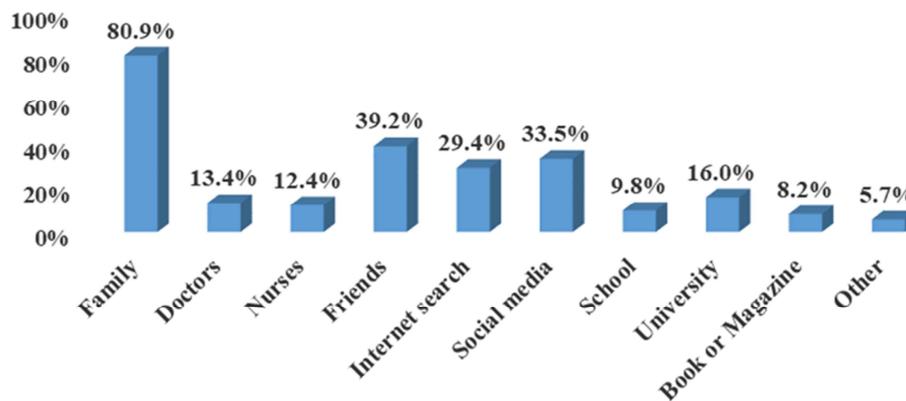


Figure 3. Source of information for methods used to relieve the menstrual pain.

4. Discussion

According to the results, over half of the nursing students suffered from moderate dysmenorrhoea, while about a quarter suffered from severe dysmenorrhoea and only a few complained of mild dysmenorrhoea. This is consistent with other studies, which found that more than half of their participants had moderate pain [9, 10]. In contrast, however, two cross-sectional studies in Saudi Arabia found that the majority of their respondents complained of severe dysmenorrhoea [5, 11]. The percentage variations in these studies suggest that dysmenorrhoea varies among females; however, this could also be due to the different pain scale each study used.

The most commonly repeated and significantly associated symptoms of dysmenorrhoea reported in the current study were nausea, diarrhoea, vomiting and dizziness. Similar

associated symptoms were seen in Sugumar et al.'s study, which was conducted among 641 female nursing students in India [12]. Although the women in both the current study and Sugumar et al.'s study appear to have similar menstrual pain symptoms, the incidence and severity of these symptoms vary, which could be due to the different culture norms of the societies. It is worth mentioning that in the current study, menstrual pain inhibited the daily living activities of the majority of the students. This confirmed that dysmenorrhoea pain negatively affected their ability to perform normal daily activities [8, 13].

In the present study, the majority of nursing students reported that the site of dysmenorrhoea pain was located in the lower abdomen and back. This result is consistent with Emem and Elzeblawy's correlational descriptive study, which aimed to assess the correlation between quality of life and dysmenorrhoea in 278 Egyptian dysmenorrhoeal nursing

students in El-Minia; they reported that two thirds of their study respondents' menstrual pain mainly occurred in the lower abdomen and back [14].

The majority of the students in the present study also described their pain as a cramp followed by sharp pain, which was significantly associated with the severity of dysmenorrhoea. This is congruent with Ismaile *et al.*'s findings on Saudi female nursing students, who described their pain as a strong pelvic cramp with sharp pain during menstruation [15]. Moreover, the present study revealed that over half of the nursing students experienced their first dysmenorrhoea pain with their menarche. Similar findings were reported by Kamel *et al.* [6]. These findings could be due to prostaglandin exposure, which leads to a higher incidence of uterine dysmenorrhoea [2].

In the present study, half of the nursing students reported that their pain began on the first day of menstruation. These results are congruent with Memmun *et al.*'s study, which aimed to determine the prevalence and symptoms of dysmenorrhoea among 380 Turkish nursing students; more than two thirds of their respondents complained of dysmenorrhoea on the first day of menstruation [16]. Over half of the nursing students in the current study reported that their menstrual pain duration ranged from one to two days, and a significant association was found between dysmenorrhoea severity and a longer menses duration. Similar results were found by Ameade *et al.* among 293 female students in Northern Ghana, more than half of which reported menstrual pain lasting less than three days [8]. Presenting dysmenorrhoea on the first day of menstruation and lasting up to two days could be due to hormonal changes and prostaglandin exposure.

The current study found that the nursing students used various methods to relieve their menstrual pain, both pharmacological and non-pharmacological. Most of the students combined these methods to relieve their pain, which is consistent with a number of other studies [8, 17, 18]. The combining of these methods could be due to the desire to relieve the pain or switching from an ineffective method to an alternative one.

Nowadays, non-pharmacological methods are popular in relieving menstruation pain [7]. When researchers investigated the use of non-pharmacological methods for alleviating dysmenorrhoea, there was a significant association between resting, using warm compresses and/or consuming an herbal drink whenever there was severe dysmenorrhoea. In line with the current study, two cross-sectional studies conducted in Saudi Arabia determined that most respondents preferred heat application as the prevalent pain management method for dysmenorrhoea [11, 15]. Alternatively, studies conducted in Egypt, Northern Ghana and India estimated that the majority of the respondents benefited from rest to decrease the menstrual pain [6, 8, 19]. Half of the respondents in Al-Jefout *et al.*'s Jordanian study managed their menstrual pain using Arab herbs [18]. The differences between these studies regarding the non-pharmacological methods used could be related to cultural

differences, individuals' reactions to pain severity and their information sources for pain relief methods. Nursing students in the present study used cinnamon as the main herb to relieve their dysmenorrhoea, followed by mint and ginger. This finding is consistent with Wong *et al.*'s study, which used mixed methods to examine self-care behaviours and their associated factors among adolescent girls with dysmenorrhoea in Hong Kong [20]. It is worth mentioning that these non-pharmacological methods are cheap, available at any grocery store and have an acceptable taste and relaxation effect.

Jaafarpour *et al.* conducted a double-blind randomised controlled study to compare the effects of placebo, ibuprofen and cinnamon on dysmenorrhoea [21]. They concluded that cinnamon could be an effective alternative treatment for primary dysmenorrhoea even with its weaker effects when compared to ibuprofen [21]. Moreover, Mirabia *et al.* reviewed 25 randomised controlled studies comparing herbs with pharmacological treatments and concluded that an herbal medicine treatment could be used as an alternative to medical treatment for primary dysmenorrhoea [22]. Future studies should explore the use of non-pharmacological methods, such as herbal remedies, to alleviate dysmenorrhoea, in terms of the roles, doses, side effects and administration routes.

In the present study, more than half of the nursing students used painkillers to reduce their menstrual pain. However, a significant positive correlation was found with dysmenorrhoea severity and medication use, which is consistent with Karanth *et al.* and Tatyana *et al.*'s studies conducted among Jordanian and Russian medical students, respectively; more than two thirds of their respondents used medication to alleviate menstrual pain [19, 23]. This may be because their respondents were from a medical field, which helped them to know about painkiller medication. Another possible reason is that medical students are keen to use faster painkiller to prevent pain from affecting their academic performance. These results highlight the need to inform students about pharmacological methods for alleviating their dysmenorrhoea pain. Accordingly, safe drug use should be a priority issue in women's education [24]. Furthermore, the main medications that nursing students used in the present study were Brofen, followed by Panadol. Using of analgesic medication by dysmenorrhoeal students such as Brofen and Panadol were found in a number of studies with some prevailing variations [8, 18, 25]. The availability of various over-the-counter medications may explain the diversity of analgesics being used in these studies.

When non-pharmacological methods for relieving dysmenorrhoea pain were investigated in the present study, it was determined that these methods were mainly used nursing students who experienced moderate menstrual pain. This may be due to the fact that students with mild menstrual pain can endure their pain, whereas students who have severe pain may seek help from the emergency unit. This is in line with Gebeyehu *et al.*'s cross-sectional study, which concluded that dysmenorrhoea severity determines the type of method used to relieve pain [17].

In the present study, the main source of information regarding the pain relief was family, followed by friends. Few students relied on advice from physicians or nurses. These findings are in accordance with Shehata et al.'s study, which was carried out among 1,908 female students at Beni Suef University to investigate the epidemiology of dysmenorrhoea and detect the knowledge sources about menstrual disorders [26]. These findings may be due to those dysmenorrhoeal students accepting the pain as a natural phenomenon that accompanies menstruation. Moreover, this may be related to many communities feeling sensitive about discussing menstruation; instead of consulting HCPs, they prefer to discuss this issue with mothers or other female relatives [17, 27]. Memmun et al. also reported that the rate of seeking medical help is low among nursing students [16], which is probably due to fear or embarrassment, as the common perception is that nurses are well educated about health problems and act as a role model for the public [28].

5. Conclusion and Recommendations

Dysmenorrhoea is a common gynaecological problem among nursing students, though they seldom seek medical advice, preferring self-care methods to manage their symptoms. Identifying the information sources and self-care methods used among dysmenorrhoeal nursing students is important, as it can assist the nursing professionals in devising an intervention to help the students. According to the researcher's knowledge, the present study is the first local study conducted among nursing students at KAU to identify the characteristics of dysmenorrhoea and the self-care methods used to relieve pain.

The ability to tolerate menstrual pain varies from one student to another. This was reflected in the self-care methods the participants used to manage their pain, from resting to visiting the emergency unit. The nurse's role in raising awareness and providing information to relieve menstrual pain was almost negligible. Further evidence-based research is needed to improve the effectiveness of sufficient methods and sources of information.

Nurses should be empowered to play an essential role in health education to raise awareness about dysmenorrhoea and self-care methods. They should also practice effective self-care methods based on evidence to reduce menstrual pain among dysmenorrhoeal women and professional interactions with family members.

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