The Prevalence, Effects and Management of Primary Dysmenorrhea among University Female Students

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Abstract

Introduction: Dysmenorrhea is one of the common reproductive year gynecological problems among females is classified into primary and secondary types. Primary dysmenorrhea presents pre-menstrual symptoms (PMS) with pains which adversely contribute unwanted physical and psychological effects on the female folks on daily basis. However, proper self-management strategies have been known to improve performance during menstrual periods.
Objectives: This research aims to assess and identify the prevalence, effects and self-management strategies of primary dysmenorrhea among the nursing students in a private university in Malaysia.
Methods: Cross-sectional study was conducted among 130 selected female nursing students in MAHSA University. A validated self-administered survey was used to obtain data regarding the prevalence, effects and self-management strategies.
Results: The prevalence of dysmenorrhea was 91.5%. while the most prominent effects of primary dysmenorrhea on the nursing students was less in class with 79.2%. Most associated pre-menstrual symptoms the nursing student experienced was abdominal cramping which occurred in 93.1 of respondents. Fortunately, this study also found that 52.3% of the nursing students preferred to treat their dysmenorrhea through non-pharmacological self-management. Rest was found through this research to be the most used self-management strategy for dysmenorrhea by students with 93.8%, while 65.4% mentioned that they ignored the symptoms of dysmenorrhea.
Conclusion: The prevalence of dysmenorrhea was high resulting in certain negative effects in the daily lives of the nursing students. Thus, this study advocates for the improvement in the self-management options for the relief of primary dysmenorrhea to minimize the negative effects on the daily lives of nursing students. Proper self-management strategies would be needful to overcome the unnecessary silent sufferings and interruptions in the daily lives of the nursing students each month, thereby, improving their productivity in the university and during clinical placements.

Keywords: Prevalence, Effects, Self-Management strategies, Primary Dysmenorrhea, Female, Nursing student.

I. Introduction

Dysmenorrhea, also known as menstrual pain or period pain, refers to the discomfort associated with menstruation experienced by many young ladies in their reproductive age (Chen, Tang, Guo, Kaminga, & Xu, 2019). Studying to become a nurse requires physical and emotional fitness to be able to care for patients, both in the hospital and in the community. However, students who have dysmenorrhea will constantly have disruptions in carrying out these activities and responsibilities for a few days of each month.

A previous study revealed that more than 10% of young females remained incapacitated for 1 to 3 days due to monthly menstrual pain (Titilayo, Agunbiade, Banjo & Lawani, 2009). Although this gynecological problem is not considered chronic, the pain can be severe enough to restrict daily activities for a day or two each month (Carlson, Eisenstat, & Ziporyn, 2004). The regular pre-menstrual symptoms that are accompanied by PD, such as nausea, vomiting, constipation, diarrhea, fatigue, insomnia, and headache, can worsen the effects for the nursing students (Vlachou et al., 2019).

Severe forms of PD can leave a young woman confined to bed, resulting in an increased rate of lectures absenteeism or clinical placement absenteeism, loss of concentration in class, failing exams, as well as emotional

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distress and affected relationships with family, friends, lecturers, and even patients (Eryilmaz, Ozdemir, and Pasinlioglu, 2010; Gagua et al., 2013; Orhan et al., 2018). Studies have shown that about 60% to 80% of women experience dysmenorrhea in their lifetime and 20% to 30% of them say that the pain becomes severe enough to disrupt their daily lives (Chia et al., 2013; Ameade, Amalba & Mohammed, 2018; Fernandez- Martinez, Onieva-Zafra, & Parra-Fernandez, 2019). Unlike secondary dysmenorrhea, Primary dysmenorrhea occurs naturally just before or during menstrual flow, without the involvement of any underlying pelvic disease or pathologies like endometriosis and uterine fibroids (Osonuga & Ekor, 2019).

Even so, previous scientific journals and research studies have discovered that the pain related to menstruation occurs as a result of excessive production of a hormone called prostaglandins, which is found in the endometrium (the innermost lining of the uterus); causing contraction of the myometrium, vasoconstriction as well as increasing the sensitivity of nerve ending, thus reducing blood flow that results into hypoxia of the endometrium (Halbert, Demers & Jones, 1976; Coco, 1999).

The cause of the excessive prostaglandin hormone production remains idiopathic but, several research studies have mentioned that it could be related to family history, unhealthy diet and sedentary lifestyle (Chandrima, 2017; Osonuga & Ekor, 2019; Monday et al., 2019). The symptoms of PD usually range from mild to severe cramping pain in the pelvic or lower abdomen, extending to the hips, lower back, and inner thighs, while GIT discomforts, fatigue, headache, nausea and vomiting, and mood swings are other symptoms that may accompany it (Chandrima, 2017).

Nevertheless, these symptoms subside after 1 to 3 days during menstrual flow or after the menstrual period. PD is unusually common among female youths in their reproductive years to the extent that struggling to manage with the pain has become part of their monthly routine (Adeoye, 2015; Abu Helwa et al., 2018), which is not supposed to be so. There are a limited number of studies that looked into primary dysmenorrhea among university students in Malaysia (Zukri, Naing and Hamzah, 2009).

However, no studies had focused on issues related to the prevalence, effects, and self-management strategies of primary dysmenorrhea among nursing students in a private university.

The purpose of this study aims to assess the prevalence and effects of PD among the nursing students in a private university and to also identify self-management strategies they practice to overcome their dysmenorrhea and its effects on their daily lives.

II.   Materials And Methods

This study was conducted at Mahsa University in Malaysia, using a quantitative method and a cross-sectional descriptive design in order to provide clues to the questions of who, what, where, and how that may be associated with certain research problems. The study involved the Diploma in Nursing students and Bachelor of Science (Hons) Nursing students who fit the sampling criteria. All the semesters are involved. There were 130 students from multiracial backgrounds who participated in this study and were between the ages of 17-28 years old.

In this study, Raosoft (2004) Sample Size Calculator was used to scientifically calculate and determine the sample size for this study. The variables were classified into two types which was independent and dependent variables. In this study, the dependent variable were the prevalence and effects of PD while the independent were the socio-demographic information and the management strategies of PD. The research tool or instrument that was used for this study was a validated online survey.

The survey was self-administered. The online survey consists of four sections which include questions related to the Socio-demographic information, prevalence of dysmenorrhea, the effects of PD on the nursing students and Strategies used to self-manage PD and its effects. Validity and reliability of the results and questionnaires were ensured using IBM Statistical Package for Social Sciences (SPSS) software 26.0 for Windows while internal consistency and correlations between questions was reviewed using Cronbach's Alpha.

Moreover, a pilot study was also conducted to further ensure the validity and reliability of the results and questionnaires. Data collection was carried out with ethical approval given by the ethical committee in the Faculty of Medicine, Biosciences & Nursing. Participants were reassured that their responses and opinions will be kept anonymous, highly confidential and will be used for the purpose of this research only.

A five-section survey formulated in google form in the English language was distributed to the students through the respective group representatives and a written consent was added at the first section of the survey before the participants could proceed to the questions. The participants were informed that they are allowed to withdraw from this study at any time.

Then, during the distribution of the survey, it was noted that only the female Nursing students could answer the questionnaire. The time allocated for the respondents to complete the whole questionnaire was between 15 to 20 minutes. It took about 3 weeks to gather all completed survey from 138 respondents. All information gathered from the respondents will be kept confidential.

III. Results And Discussion

Analyzed results did show majority with sixty-eight respondents representing 52.3% of the female nursing students were between the ages of 17-20. There were forty-nine respondents making up 37.7% respondents who were between ages 21-24, while thirteen respondents, that was 10.0% were between the ages of 25 and 28. All the respondents were degree and diploma nursing students. Majority of the nursing students who participated were Malay making up 60.8%, while Chinese Malaysian student nurses made up 13.1%, Malaysian student nurses of Indian origin were 7.7% and nursing students from other races categorized into the *Others* group were 18.5% of total respondents. Results also shown that fifty-seven participants (43.8%) started their menstruation between the ages of 13-15 years old. four respondents (3.1%) started after 15 years of age, while sixty-nine (53.1%) had their first menstruation before fifteen years old. A majority of ninety-five of the nursing students making up of 73.1% of those who participated had regular Menstrual periods and thirty-five respondents (26.9%) had irregular menstrual periods. A substantial number of one hundred and two respondents (78.5%) had a menstrual duration lasting for 5-7 days, and seventeen (13.1%) had menstrual durations lasting for 2-4 days while eleven (8.5%) lasting for more than 7 days. Fifty-six (43.1%) had known family history of dysmenorrhea while seventy-four (56.9%) had no family history of PD.

Table 1: Socio-demographic characteristics of the respondents

Socio demographic Characteristics	n	%
Age		
17– 20	68	52.3
21– 24	49	37.7
25-28	13	10.0
Ethnicity		
Chinese	17	13.1
Indian	10	7.7
Malay	79	60.8
Others	24	18.5
Age of Menarche		
13-15	57	43.8
After 15	4	3.1
Before 13	69	53.1
Menstrual Pattern		
Irregular	35	26.9
Regular	95	73.1
Menstrual Duration		
2-4 days	17	13.1
5-7 days	102	78.5
>7 days	11	8.5
Family History of Primary Dysmenorrhea		
Yes	56	43.1
No	74	56.9

Data analysis in Tab 2 shows the premenstrual symptoms experienced by the nursing students. From the above table tender breasts, 55.4% had changes in their appetite, 93.1% had abdominal cramping, 29.2% experienced nausea while 13.1% vomited. In addition, 26.2% experienced diarrhea and 21.5% had constipation.

Table 2: Premenstrual symptoms among the respondents

Premenstrual Symptoms	n	%
Headache	56	43.1
Dizziness	43	33.1
Fainting	5	3.8
Fatigue/ Tiredness	96	73.8
Mood Swings	108	83.1
Tender Breasts	63	48.5
Change in Appetite	72	55.4
Abdominal Cramping	121	93.1
Abdominal Bloating	38	29.2
Nausea	29	22.3
Vomiting	17	13.1
Diarrhea	34	26.2
Constipation	28	21.5

The Effects of Primary dysmenorrhea on the respondents

Table 3 below shows the effects of primary dysmenorrhea on the respondents. The assessment was made in respect of their responses of YES or NO. According to the results in this study, 68.5% of student reported no problem with lecture absenteeism due to their dysmenorrhea, 92.3% noted that dysmenorrhea did not make them absent from exam, 76.2% had no issues with clinical placement absenteeism while a vast majority (96.9%) of participant Nursing students had never failed OSCE due to dysmenorrhea. However, 74.6% reported that dysmenorrhea disturbed them from reading or studying. Majority making up 79.2% of the students in this study reported that dysmenorrhea affected them by hindering them from concentrating in class. Moreover, 70.8% reported that dysmenorrhea interfered with their social activities with friends, families, or lecturers. In addition, 76.2% achieved less in their daily activities and 54.6% felt afraid and worried when their menstrual period was approaching due to the experience of dysmenorrhea. Nevertheless, as many as 54.6% reported no experience of depression due to dysmenorrhea.

Table 3: The effects of primary dysmenorrhea on the respondents

| Effects of Primary Dysmenorrhea	n	%
I have been absent from lectures due to my dysmenorrhea		
Yes	41	31.5
No	89	68.5
I have been absent from an exam paper due to my dysmenorrhea.		
Yes	10	7.7
No	120	92.3
I have been absent from clinical placements due to dysmenorrhea		
Yes	31	23.8
No	99	76.2
I have failed an exam paper or OSCE due to dysmenorrhea		
Yes	4	3.1
No	126	96.9
Dysmenorrhea disturbs me from reading or studying		
Yes	97	74.6
No	33	25.4
Dysmenorrhea hinders me from concentrating in class		
Yes	103	79.2
No	27	20.8
Dysmenorrhea interferes with my social activities with friends, families, or lecturers		
Yes		
No	92	70.8
I achieve less in my daily activities due to dysmenorrhea	38	29.2
Yes	99	76.2
No	31	23.8
I feel afraid and worried when my menstrual period is approaching.		
Yes	71	54.6
No	59	45.4
Dysmenorrhea makes me feel depressed.		
Yes	59	45.4
No	71	54.6

Self-Management strategies of dysmenorrhea and its effects by the respondents

The most preferred method to manage dysmenorrhea is shown below (Tab 4, Fig. 1).

Table 4: The most preferred method to manage dysmenorrhea

Most Preferred way to manage dysmenorrhea	n	%
Physician consultation	1	0.8
Over-the-counter analgesic medications	23	17.7
Non-pharmacological Self-management	68	52.3
Ignore the pain	38	29.2
Total	130	100.0

Most of the respondents representing 52.3% of respondents preferred the non-pharmacological self-management method to manage their dysmenorrhea, 17.7% preferred over-the-counter (OTC) medications, 29.2% preferred to ignore the pain and only 0.8% preferred to consult a physician to manage the dysmenorrhea.
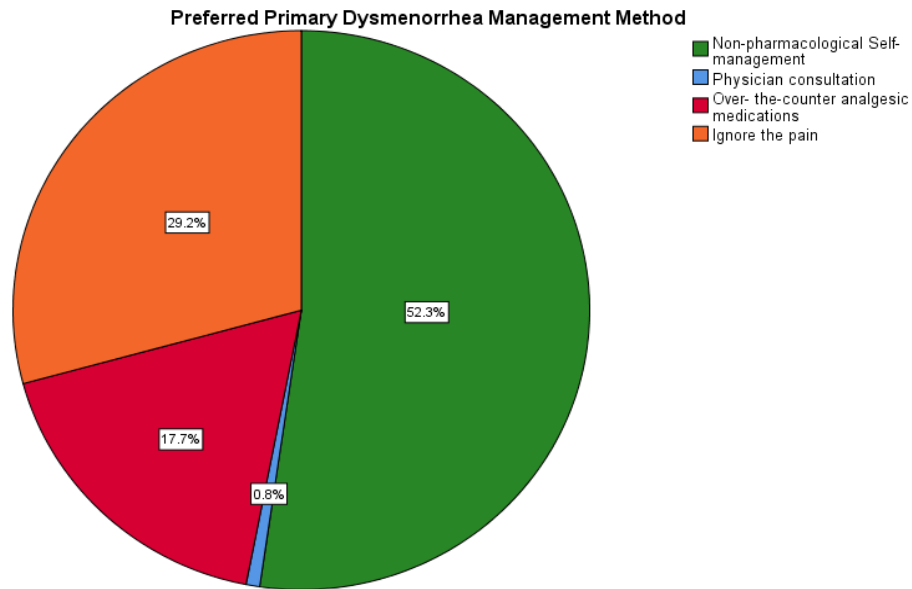
Figure 1: The most preferred method to manage dysmenorrhea

The following self-management strategies for dysmenorrhea were practiced by the nursing students in the private university. The most used self-management strategy was to Rest in Bed with 93.8% preference. Additionally, 72.3% practiced heat therapy, only 3.1% used acupuncture to manage their dysmenorrhea. Again, 62.3% used hot drinks, 49.2% practiced abdominal massage, 10.0% practiced aromatherapy, 17.7% used exercise as a self-management strategy,18.5% practiced positioning, 12.3% used ginger, 17.7% used herbs and herbal tea, 13.8% used health supplement and oils, 22.3% practiced dietary modifications and 2.3% used medicated heat rub oil as a self-management strategy for their dysmenorrhea.

Table 5: Self- management strategies for dysmenorrhea

Self-management strategies for Dysmenorrhea	n	%
Heat Therapy	94	72.3
Rest In Bed	122	93.8
Acupuncture	4	3.1
Hot Drinks	81	62.3
Abdominal Massage	64	49.2
Aromatherapy	13	10.0
Exercise	23	17.7
Positioning	24	18.5
Ginger	16	12.3
Herbs and Herbal Tea	23	17.7
Health Supplements and Oils	18	13.8
Dietary Modifications	29	22.3
Medicated heat Rub Oil	3	2.3

Table 6 and Fig. 2 below show the most effective management strategies that best relieved the respondents' dysmenorrhea. The most effective self-management strategy according to the result was Rest in Bed with 35.4%. Additionally, Heat therapy was also considered effective with 34.6%, followed by hot drinks with 10.8% of total respondents. The efficacy of Abdominal massage was 5.4%, Positioning and Yoga with 3.1%, Herbs and Herbal tea with 2.3%, Exercise 2.3%, Acupuncture with 2.3%, and 1.5% found Dietary Modifications such as Avoiding alcohol drinks, avoiding sugary, oil or preserved food to be the most effective self-management strategy while only 0.8% considered Health Supplements oils as the most effective.

Table 6: Most Effective Self- Management Strategies

Self- Management Strategy that best relieves dysmenorrhea	n	%
Rest in bed	46	35.4
Positioning and Yoga	4	3.1
Hot drinks	14	10.8
Herbs and Herbal tea	3	2.3
Heat therapy (heating pads, hot shower)	45	34.6
Health Supplements oils (fish oil, primrose oil, vitamin E, etc.)	1	.8
Ginger	2	1.5
Exercise	3	2.3
Dietary Modifications (Avoid alcohol drinks, Avoid sugary, oily, preserved food, etc.)	2	1.5
Acupuncture	3	2.3
Abdominal massage	7	5.4
Total	130	100.0
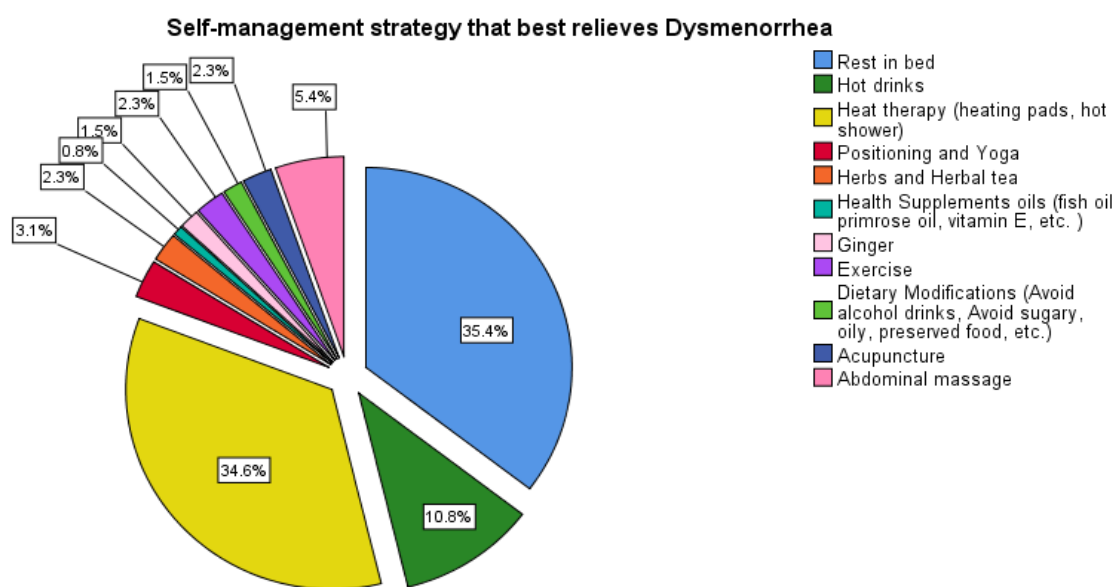
Figure 2: Most Effective Self-Management Strategy

This study revealed that the prevalence of PD was significantly high (91.5%), as most of the nursing students reported experiencing it. This is comparable to 92% recorded among the nursing students in Saudi Arabia (Ismaile et al., 2019). A study done in India reported 70.2% prevalence (Omidvar et al., 2015) while other studies in Spain and Mexico reported 76% (Fernández-Martínez et al., 2019) and 64% (Ortiz, 2010) respectively. However, an earlier study among the dental and medical students in Kelantan, Malaysia reported a lower prevalence rate of 50.9% (Zukri et al., 2009), which is similar to 51.1% reported in Changsha, China (Chen et al., 2018).

The variations seen in prevalence is unclear. However, Abu Helwa et al. (2018) stated that the use of different criteria for the definition of dysmenorrhea in different studies could be the possible reasons for the variations. Thus, in this study, the operational definition of dysmenorrhea and PD was stated clearly to provide a more relevant comparison for future studies. The results successfully achieved the first objective of this study which assessed and confirmed that PD is indeed a common gynecological problem. Extra information about the severity, duration and frequency of the pain among those who suffered from dysmenorrhea were asked. Majority of the respondents in this study experienced moderate intensity of menstrual pain for the duration of 1 day only (46.2%). This was different

from the previous study where 52.5% of the respondents had severe intensity of pain (Vlachou et al., 2019). The common symptoms experienced by the respondents were abdominal cramping (93.1%) and mood swing (83.1%). In summary, PD was highly prevalent among the nursing students with a high level of burdensome pre-menstrual symptoms.

The nursing students were indeed affected by dysmenorrhea. This study discovered the inability to concentrate in class (79.2%) as the most prominent effect of PD among the nursing students; similar to Eryilmaz et al (2010) where the females were unable to focus on their courses (50%). Chia et al (2016) mentioned reduced ability to concentrate and/or disturbance with study (75%) in their study. Other rampant effects were the disturbance from reading and studying (74.6%), Interference in social activities (70.8%) and achieving less in daily activities (76.2%). The percentage of absenteeism was slightly higher (31.5%) that than a study done by Ismaile et al (2016) where lecture and college absenteeism was 30%. However, in terms of emotional effects, 54.6% experienced anxiety and worry while 45.4% felt depressed due to dysmenorrhea. This study was unable to dictate the intensity of depression and anxiety among the respondents. Tilitayo et al (2009) mentioned that the burden of menstrual discomfort is greater than any other gynecological complaint.

Moreover, the results provided necessary information on the self-management strategies for PD among the nursing students in the private university. Majority of the nursing students in this study preferred self-management strategies, compared to a study done by Adeoye (2016), which reported the student preferring pharmacological methods to treat their dysmenorrhea. However, this study could have obtained the results favoring the use of self-management strategies due to the knowledge of the nursing students about the adverse effects of OTC painkillers. In a study done by Chia et al (2016), 6% of their participants consulted medical advice, while 70% practiced self-management strategies. Similarly, Ismaile et al (2016) reported that majority of nursing students did not seek medical treatment from a doctor; 70% of the nursing students practiced self-management strategies of heat therapy and pressure. Moreover, in the research study done by Omidvar et al (2016), very few numbers of students (25.5%) seek medical advice, while a larger group of students (83.2%) self-managed their dysmenorrhea. This shows many women found it convenient to treat their menstrual pains and discomforts at home independently. In other case, it could be because menstruation is considered as a private and sensitive topic in many cultures, thus, its accompanied complaints and pains are usually borne silently by most females (Ameade et al., 2018).

In this study, the mostly used self-management strategy was resting in bed, which was similar to Omidvar et al (2016). Preferring resting in bed as the most suitable management strategy during menstruation could contribute to increased setbacks in daily activities due to the students remaining incapacitated in bed for few days each month. In addition, the most effective self-management strategy recorded in this study was resting in bed. This was contrast to a previous study whereby exercise was the most effective self- management strategy (Fernandez-Martinez et al., 2019). A metastatic review and analysis done by Amour et al (2019) also revealed that exercise was more effective than analgesics in reducing dysmenorrhea intensity. The nursing students in this current study did not make adequate use of exercise or physical activities as a self-management method to overcome dysmenorrhea.

Furthermore, Majority of the students preferred managing dysmenorrhea effects by ignoring how it had affected them. This means students do not make effort in solving any problem that had been caused by dysmenorrhea in their daily lives. The average duration the nursing students in this study make use of their self-management strategies was for 2-3 days.

PD is significantly prevalent and had a tremendous effect on the daily lives of the Nursing students. The students practiced diverse self-management strategies; however, the students should adopt more effective and beneficial self-management strategies that is relatively safe.

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