

## Prevalence of dysmenorrhea among adult females aged 18-50 years and its effects on daily activities: a cross-sectional study in Malaysia, 2024

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### Original article

#### Abstract

**Background:** Women's health is often overlooked and under-studied in the past and present. Dysmenorrhea is known as painful menstruation which is a common gynaecological condition that causes intense pain and dysfunction in women of reproductive age.

**Objective:** The general objective is to determine the prevalence of dysmenorrhea among females aged 18 to 50 years old in Malaysia. We studied dysmenorrhea and how it affects daily activities compared to females without dysmenorrhea, factors that aggravate the menstrual pain, symptoms, lifestyle habits and coping mechanisms associated with dysmenorrhea.

**Methods:** A cross-sectional study conducted during 2024 for a period of 3 months. Our targeted population was females aged 18-50 years old in Malaysia. Non-probability convenient sampling was used and distributed via google form questionnaires to collect data. Statistical software SPSS and chi-square test was used to analyse the data to measure the associations.

**Results:** The study showed that prevalence of dysmenorrhea was 92.8% and there was a significant relationship between dysmenorrhea severity and various sociodemographic factors, particularly age and body mass index (BMI) with  $p < 0.05$ . There was no significant association between age groups and dysmenorrhea intensity, thus indicating that age does not strongly influence severity of dysmenorrhea. Situational factors such as pain during bowel movements or while walking are associated with increased severity of dysmenorrhea ( $p < 0.001$ ). Coping strategies show analgesic use is common among women with severe dysmenorrhea ( $p < 0.001$ ).

**Conclusion:** This study showed that dysmenorrhea has a significant impact on the quality of life of the majority of women experiencing moderate to severe pain lasting 1 to 3 days. The implementation of effective strategies such as lifestyle modification, providing information and support groups can empower individuals to manage dysmenorrhea should be done as they have the potential to significantly enhance the overall well-being of those affected, ultimately reducing the burden of this condition on women.

**Key words:** dysmenorrhea, prevalence, daily activities, absenteeism, coping mechanism, Malaysia

## Introduction

Dysmenorrhea, derived from Greek, which translates to “painful monthly bleeding” refers to pain experienced during the menstrual cycle (1). Dysmenorrhea is the prevalent issue affecting female individuals of reproductive age often leading to substantial emotional, psychological, and functional health challenges. It is a widespread gynaecological issue that can significantly affect a patient's quality of life (1).

Dysmenorrhea is categorised into two types: primary and secondary. Primary dysmenorrhea is characterised by recurring lower abdominal pain during menstruation due to uterine contraction that is not associated with any other medical conditions and typically begins within a year of menarche such as painful menstrual cramps in teenagers. On the other hand, secondary dysmenorrhea is associated with identifiable underlying conditions, such as pelvic diseases, and typically arises more than two years after menarche such as painful periods due to endometriosis where endometrial tissue grows outside the uterus leading to chronic pelvic pain (2). Dysmenorrhea, characterised by sharp, spasmodic, and intermittent pain, is a common issue that affects women globally. It is classified based on its impact on daily activities: mild if it does not hinder them, moderate, and severe if it prevents them entirely. The physical symptoms include headaches, fatigue, sleep disturbances, breast tenderness, various body aches, appetite changes, nausea, vomiting, constipation or diarrhea, and increased urination. Additionally, dysmenorrhea can also cause psychological symptoms such as anxiety, depression, and irritability (3).

In Malaysia, primary dysmenorrhea prevalence reached a significant rate of 62.3% (4). This condition is a major source of gynaecological morbidity, impacting women's ability to concentrate and perform daily activities. In severe cases, it can lead to psychological problems such as depression and reduced social interaction (5). In Malaysia, dysmenorrhea plays a role in reducing concentration and increasing absenteeism from school or work (4). It was more common in younger individual aged 18-24 years in Malaysia and the prevalence varied among ethnic groups, with the studies indicated that higher rates in Malay compared to Chinese and Indian population (6,7). Based on the findings, underweight and obese individuals were more likely to experience dysmenorrhea compared to those with a normal BMI (7). It has a negative impact on women's activities and productivity. According to previous studies, there was the moderate negative correlation between physical activity and severity of dysmenorrhea ( $r = -0.48$ ,  $p < 0.035$ ) indicated that individuals met with WHO physical activity guidelines, reported lower pain severity (6). The problem was further exacerbated by a widespread lack of knowledge about dysmenorrhea among women. Many are unaware of effective management strategies and proper menstrual hygiene practices, leading to inadequate care and exacerbating their condition. This lack of understanding can significantly affect their quality of life, influencing both academic achievements and workplace performance. Moreover, studies indicated that cultural stigmas surrounding menstruation may affect management and understanding dysmenorrhea since knowledge about menstruation usually transmitted through mothers or school system rather than fathers or internet sources (8).

To address these issues, it is crucial to improve education and awareness about dysmenorrhea, enabling better management and reducing its overall impact (4).

Apart from this inefficient and poor management of dysmenorrhea often involves improper use of medication, which can lead to serious comorbidities. For instance, excessive use of painkillers to alleviate abdominal cramps and pain may increase the risk of renal impairments or gastrointestinal bleeding (4). In severe cases, these complications can be potentially life-threatening.

Understanding the prevalence and impact of dysmenorrhea is crucial, as it highlights the need for effective management strategies and greater awareness. Despite its high prevalence and its significant effect on quality of life, dysmenorrhea remains under-recognized and often inadequately addressed in healthcare settings. Therefore, the aim of our study was to identify the prevalence of dysmenorrhea among 18- to 50-year-old adult females in Malaysia and its impact on the quality of life and their daily functioning to learn about coping strategies according to severity of dysmenorrhea.

## Methodology

### **Study design, setting and study population**

The study design was an analytical cross-sectional study which was conducted during 2024. Study focuses on Malaysian adult females aged 18 to 50 years old who are accessible to WhatsApp, Telegram, Instagram, email and who can comprehend English and/or Bahasa Melayu. According to previous literature, the study population was adult females aged 18 to 50 years old who reside in Malaysia, regardless of their socio demographic background.

### **Data collection and Sample size determination**

The sample size for this study was calculated using OpenEpi (Version 3.01). The estimated prevalence of dysmenorrhea among females aged 18 to 50 years old in Malaysia was 73.2% (9). The confidence limit was set to +/- 5 and based on that with the 95% of confidence level, and 5% precision, the estimated sample size calculated was 302 as shown in **Figure 1**. By considering a non-response rate of 20%, the final required sample size was approximately 378.

This study used non-probability convenience sampling to recruit participants. This approach ensured practicality by selecting medical students who are readily accessible or willing to participate. Data collection was conducted through an online questionnaire adapted from pre-existing, validated sources, and it was available in both English and Bahasa Malaysia. The questionnaires consisted of eight sections with 54 questions which were adapted mainly from the published articles done by Mizuta R et al. (2023) and Abreu-Sánchez A. et al. (2020), cited from credible sources to support the findings and both articles presented with balanced information instead being overly biased or one-sided (10, 11). In this study, we conducted content validation and calculated the Content Validity Index (CVI) for the questionnaire to strengthen the face and content validity of the questionnaire for meaningful and understandable to the targeted population since this process included expert evaluation and CVI score was 0.95 indicated the evidence of good content validity of the research questionnaire. Section 1 provided an information sheet and informed

consent, informing participants about the study, its voluntary nature, and potential risks. Section 2 gathered sociodemographic information, including age, weight, height, nationality, ethnicity, education level, occupation, economic status, and living environment. Section 3 consisted of questions about severity of dysmenorrhea which was characterized into four categories such as no dysmenorrhea, mild, moderate and severe dysmenorrhea, using a visual analogue scale from 1-10 for pain intensity. Section 4 examined triggers or situations that intensified menstrual pain, such as pain with a full bladder or bowel movements, where participants rated the pain from 1-10 or selected "none" if not experienced.

Section 5 addressed how dysmenorrhea interfered with their daily life, education, and social activities, with "Yes," "No," or "Not applicable" responses. Section 6 explored menstrual symptoms (e.g., nausea, vomiting, fatigue) and whether they led to absenteeism. Section 7 covered lifestyle habits such as smoking, sleep duration, breakfast consumption, snacking habits, and weekly exercise. Lastly, Section 8 focused on coping strategies for dysmenorrhea, including the use of analgesics, oral contraceptives, or seeking medical consultation, with "Yes" or "No" options provided for each strategy.

**Fig. 1** Sample size calculation using OpenEpi

### Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(N):	8305840
Hypothesized % frequency of outcome factor in the population (p):	73.2%+/-5
Confidence limits as % of 100(absolute +/- %)(d):	5%
Design effect (for cluster surveys-DEFF):	1

#### Sample Size(n) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	302
80%	129
90%	213
97%	370
99%	521
99.9%	850
99.99%	1189

#### Equation

$$\text{Sample size } n = [\text{DEFF} * Np(1-p)] / [(d^2/Z^2_{1-\alpha/2} * (N-1) + p*(1-p))]$$

#### Sampling Method

In this study, non-probability convenience sampling method was used to recruit the participants. In order to collect responses, we shared a survey link to family, friends, neighbours, public adult audience and associates on various social media platforms, including WhatsApp, Instagram, Facebook, Telegram, and through email. The study includes Malaysian female participants who are 18 to 50 years old, of any ethnicity, and willing to take part. The females who have reached menopause, aged less than 18 yrs and above 50 and those who did not provide informed consent were excluded from the study.

#### Data Processing and Data Analysis

The data were processed and analysed using the SPSS (Version 29) software and the results were presented through frequency counts and other descriptive statistics.

Under the inferential statistics, chi-square test for analysis was selected to measure the association between independent and dependent categorical variables. The significant level (p-value) was set up at 0.05 with 95% confidence interval.

#### Ethical Consideration

An information document outlined the goal of the study, its voluntary nature, and the lack of reward is given to participants. In order to ensure understanding and the freedom to withdraw at any moment, written informed permission was provided prior to enrolment of the study. Anonymized data were safely preserved, with only the research team having access to the data. The ethical approval was obtained from research management Research Ethics Committee, Manipal University College Malaysia (MUCM). (Ref: MUCM/ Research Ethics Committee - 001B/08/2024)

## Results

### Descriptive data of questionnaire

**Tab. 1** Sociodemographic characteristics of the respondents (n = 440)

Variable	Frequency (n = 440)	Percentage (%)
<b>Age</b>		
18-28	235	53.4
29-39	162	36.8
40-50	43	9.8
<b>BMI</b>		
Underweight (16-18.4 kg/m <sup>2</sup> )	46	10.5
Normal (18.5-24.9 kg/m <sup>2</sup> )	207	47
Overweight (25.0-29.9 kg/m <sup>2</sup> )	101	23
Obese (> 30 kg/m <sup>2</sup> )	86	19.5
<b>Nationality</b>		
Malaysian	397	90.2
Non- Malaysian	43	9.8
<b>Ethnicity</b>		
Malay	272	61.8
Chinese	105	23.9
Indian	41	9.3
Others	22	5
<b>Educational Level</b>		
Primary Education (Primary School)	2	0.5
Secondary Education (Secondary School)	60	13.6
Tertiary Education (Foundation, diploma, degree, and postgraduate programmes)	377	85.7
No schooling	1	0.2
<b>Occupation</b>		
Employed	241	54.8
Unemployed	138	31.3
Students	61	13.9
<b>Economic Status per month</b>		
B40 (< RM5,250)	242	55.0
M40 (RM5,250- RM11,819)	146	33.2
T20 (> RM11,819)	52	11.8
<b>Living Environment</b>		
Urban	368	83.6
Rural	72	16.4

The age distribution showed that 53.4% were aged 18-28, 36.8% were 29-39, and 9.8% were 40-50. The BMI categories indicated that 10.5% were underweight, 47% were normal, 23% were overweight, and 19.5% were obese. Nationality data showed that 90.2% were Malaysian, while 9.8% were non-Malaysian. Ethnicity groups showed that the majority were 61.8% Malay, followed by 23.9% Chinese, 9.3% Indian, and 5% were from other ethnicities. Educational

levels showed that 85.7% had tertiary education, 13.6% had secondary education, and only 0.5% had primary education. Employment status revealed that 54.8% were employed, 31.3% were unemployed, and 13.9% were students. Economic status categorized participants as B40 (55%), M40 (33.2%), and T20 (11.8%). Living environment showed a predominance of urban residents at 83.6%, compared to 16.4% in rural areas.

**Tab. 2** Intensity level of dysmenorrhea among the respondents (n = 474)

Intensity of dysmenorrhea	Frequency (n)	Percentage (%)
Mild	92	19.4
Moderate	204	43.0
Severe	144	30.4
None	34	7.2

**Table 2** presented that 92.8% of the participants suffered dysmenorrhea among 474 respondents, which was the initial total number of respondents. The majority of participants (43%) reported experiencing moderate dysmenorrhea, followed by 30.4% who experienced severe dysmenorrhea. A smaller proportion, 19.4%, had mild dysmenorrhea, while 7.2% of the respondents reported no symptoms of

dysmenorrhea at all. This data showed a significant variation in the level of severity due to dysmenorrhea among females aged 18 to 50 years old in Malaysia. This finding rejected the null hypothesis which stated that there was no significant variation in the level of severity among respondents. It was important to note that we cleared the “none” responses, which left us with a final total sample of 440.

**Tab. 3** Characteristics of dysmenorrhea among the respondents (n = 440)

Variable	Frequency (n)	Percentage (%)
<b>Duration of pain</b>		
None	2	0.45
< 1 day	9	2.04
1 to 3 days	388	88.18
3-6 days	31	7.04
> 6 days	10	2.27
<b>Amount of menstrual flow</b> (tampons/cloths/pads per day)		
Small (< 5)	172	39.1
Moderate (5-7)	228	51.8
Large (> 7)	40	9.1
<b>Rhythmicity of menstrual cycle</b>		
Normal	358	81.4
Polymenorrhea	35	8
Menorrhagia	47	10.7
<b>Family history of dysmenorrhea</b>		
Yes	170	38.6
No	114	35.5
Not Known	156	25.9
<b>Situations which trigger or intensified menstrual pain</b>		
<b>Pain with full bladder</b>		
None	201	45.7
Mild	94	21.4
Moderate	122	27.7
Severe	23	5.2
<b>Pain while urinating</b>		
None	268	60.9
Mild	107	24.3
Moderate	55	12.5
Severe	10	2.3
<b>Pain with bowel movement</b>		
None	167	38.0
Mild	119	27.0
Moderate	111	25.2
Severe	43	9.8
<b>Pain when having sexual relation</b>		
None	333	75.7
Mild	60	13.6
Moderate	37	8.4
Severe	10	2.3
<b>Pain when walking</b>		
None	141	32.0
Mild	106	24.1
Moderate	122	27.7
Severe	71	16.1
<b>Pain while being seated</b>		
None	120	27.3
Mild	114	25.9
Moderate	130	29.5
Severe	76	17.3
<b>Pain while lifting weights</b>		
None	150	34.1
Mild	104	23.6
Moderate	118	26.8
Severe	68	15.5

<b>Types of interferences of dysmenorrhea</b>		
<b>Interference with daily life</b>		
Yes	258	58.6
No	182	41.4
<b>Interference with attention in class</b>		
Yes	199	45.2
No	94	21.4
Not applicable	147	33.4
<b>Interference with class work</b>		
Yes	196	44.5
No	125	28.4
Not applicable	119	27.1
<b>Interference with social activities</b>		
Yes	275	62.5
No	165	37.5
<b>Interference with sports</b>		
Yes	290	65.9
No	150	34.1
<b>Interference with paid work</b>		
Yes	200	45.5
No	240	54.5
<b>Interference with family relation</b>		
Yes	124	28.2
No	316	71.8
<b>Interference with sexual relation</b>		
Yes	106	24.1
No	334	75.9
<b>Interference with partner relation</b>		
Yes	119	27.0
No	321	73.0

According to **Table 3**, the duration of menstrual pain was predominantly experienced by individuals for 1 to 3 days, with 388 individuals reporting this timeframe; only a small number experienced pain that lasted longer, and very few reported pains extending beyond 6 days or none at all. Regarding menstrual flow, most individuals experienced a moderate amount (51.8%), while fewer reported either small or large volumes. In terms of cycle rhythmicity, the majority had a normal menstrual cycle (81.4%), with a smaller percentage experiencing menorrhagia or polymenorrhea. Additionally, a notable proportion of individuals (38.6%) had a family history of dysmenorrhea, although there was also a significant number whose family history remained unknown (25.9%).

Most individuals reported experiencing no pain (45.7%) or only mild discomfort when their bladder was full, although a significant number also experienced moderate pain (27.7%), with severe pain being relatively uncommon. During urination, the majority (60.9%) did not experience pain, with only a small fraction reporting moderate to severe discomfort. In terms of bowel movements, while many did not experience significant pain (38%), mild pain (27%) was the most common, followed closely by moderate pain (25.2%), with severe pain occurring less frequently. When it came to sexual relations, a large majority (75.5%) reported no pain, making severe discomfort rare. Pain while walking ranged from mild (24.1%) to moderate (27.7%), with a noteworthy portion experiencing severe pain. For

those seated, moderate pain was most reported (29.5%), though mild and severe pain were also observed. Finally, when lifting weights, moderate pain (26.8%) was frequently reported, while severe pain occurred less often.

The study also highlighted several ways dysmenorrhea interfered with different aspects of life. A majority of respondents (58.6%) reported that their daily life was disrupted, while 41.4% experienced no such issues. Regarding attention in class, 45.2% had difficulty focusing, 21.4% did not, and 33.4% indicated the question didn't apply to them, likely because they weren't students. Similarly, 44.5% experienced interference with classwork, 28.4% did not, and 27.1% found the question irrelevant. Social activities were impacted for 62.5% of respondents, while 37.5% reported no issues. Sports participation was affected for 65.9%, with 34.1% unaffected. When it came to paid work, 45.5% faced interference, while 54.5% did not. Family relations were affected for 28.2%, but the majority (71.8%) reported no disruptions. Sexual relations were impacted for 24.1%, with 75.9% experiencing no interference, and partner relations were affected for 27% of respondents, while 73% did not face any issues in this area. This showed that dysmenorrhea had a significant impact on daily activities among respondents, which rejected the null hypothesis that stated dysmenorrhea does not have a significant impact on daily activities among females aged 18 to 50 years old in Malaysia.

**Tab. 4** Menstrual symptoms and if it leads to absenteeism, and lifestyle habits among the respondents (n = 440)

<b>Menstrual symptoms and if it leads to absenteeism</b>		
<b>Variable</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Feeling of nausea</b>		
Yes, does not lead to absenteeism	151	34.3
Yes, lead to absenteeism	63	14.3
No	226	51.4
<b>Experience of vomiting</b>		
Yes, does not lead to absenteeism	54	12.3
Yes, lead to absenteeism	40	9.1
No	346	78.6
<b>Feeling of fatigue</b>		
Yes, does not lead to absenteeism	259	58.9
Yes, lead to absenteeism	127	28.9
No	54	12.3
<b>Experience of dizziness</b>		
Yes, does not lead to absenteeism	153	34.8
Yes, lead to absenteeism	88	20.0
No	199	45.2
<b>Experience of headaches</b>		
Yes, does not lead to absenteeism	173	39.3
Yes, lead to absenteeism	88	20.0
No	179	40.7
<b>Experience of diarrhea</b>		
Yes, does not lead to absenteeism	169	38.4
Yes, lead to absenteeism	56	12.7
No	215	48.9
<b>Feeling depressed</b>		
Yes, does not lead to absenteeism	183	41.6
Yes, lead to absenteeism	63	14.3
No	194	44.1
<b>Feeling irritable</b>		
Yes, does not lead to absenteeism	286	65.0
Yes, lead to absenteeism	81	18.4
No	73	16.6
<b>Experience of insomnia</b>		
Yes, does not lead to absenteeism	135	30.7
Yes, lead to absenteeism	49	11.1
No	256	58.2
<b>Unable to concentrate</b>		
Yes, does not lead to absenteeism	206	46.8
Yes, lead to absenteeism	76	17.3
No	158	35.9
<b>Lifestyle habits</b>		
<b>Smoking</b>		
Yes	419	4.8
No	21	95.2
<b>Hours of sleep per day</b>		
≥ 7 hours	272	38.2
< 7 hours	168	61.8
<b>Taking breakfast every morning</b>		
Yes	232	52.7
No	208	47.3
<b>Taking in between meals</b>		
Yes	253	57.5
No	187	42.5
<b>Duration of exercise per week</b>		
≥ 2 times, 30 minutes a week	129	29.3
< 2 times, 30 minutes a week	193	43.9
None	118	26.8

According to **Table 4**, menstrual symptoms significantly impacted absenteeism among women, with various symptoms leading to different rates of missed work or school days. For instance, feelings of nausea contributed to absenteeism in 14.3% of cases, while 34.3% reported no absenteeism due to this symptom. Vomiting led to absenteeism in 9.1% of cases, with 12.3% not experiencing absenteeism. Fatigue was a major factor, causing absenteeism in 28.9% of cases and not affecting 58.9%. Dizziness and headaches each led to absenteeism in 20.0% of cases, while not affecting 34.8% and 39.3%, respectively. Diarrhea resulted in absenteeism for 12.7%, with 38.4% unaffected, while feelings of depression and irritability led to absenteeism in 14.3% and 18.4% of cases, respectively, with non-absenteeism rates at 41.6% and 65.0%. Insomnia affected absenteeism in 11.1% of cases, with a non-absenteeism rate of 30.7%, and the inability to concentrate

led to absenteeism in 17.3%, affecting 46.8% who did not miss work or school.

In terms of lifestyle habits among a total of 440 respondents, a vast majority (95.2%) reported they did not smoke, while only a small percentage (4.8%) were smokers. Sleep patterns indicated that 61.8% slept less than seven hours per day, whereas 38.2% achieved at least seven hours of sleep nightly. Breakfast consumption showed that slightly over half (52.7%) ate breakfast daily, while nearly half (47.3%) skipped it. Snacking between meals was common, with 57.5% engaging in this behaviour compared to 42.5% who did not snack at all. Exercise frequency revealed that only 29.3% met the recommended guideline of exercising at least twice a week for thirty minutes; conversely, 43.9% exercised less than this amount, and 26.8% reported no exercise activity whatsoever.

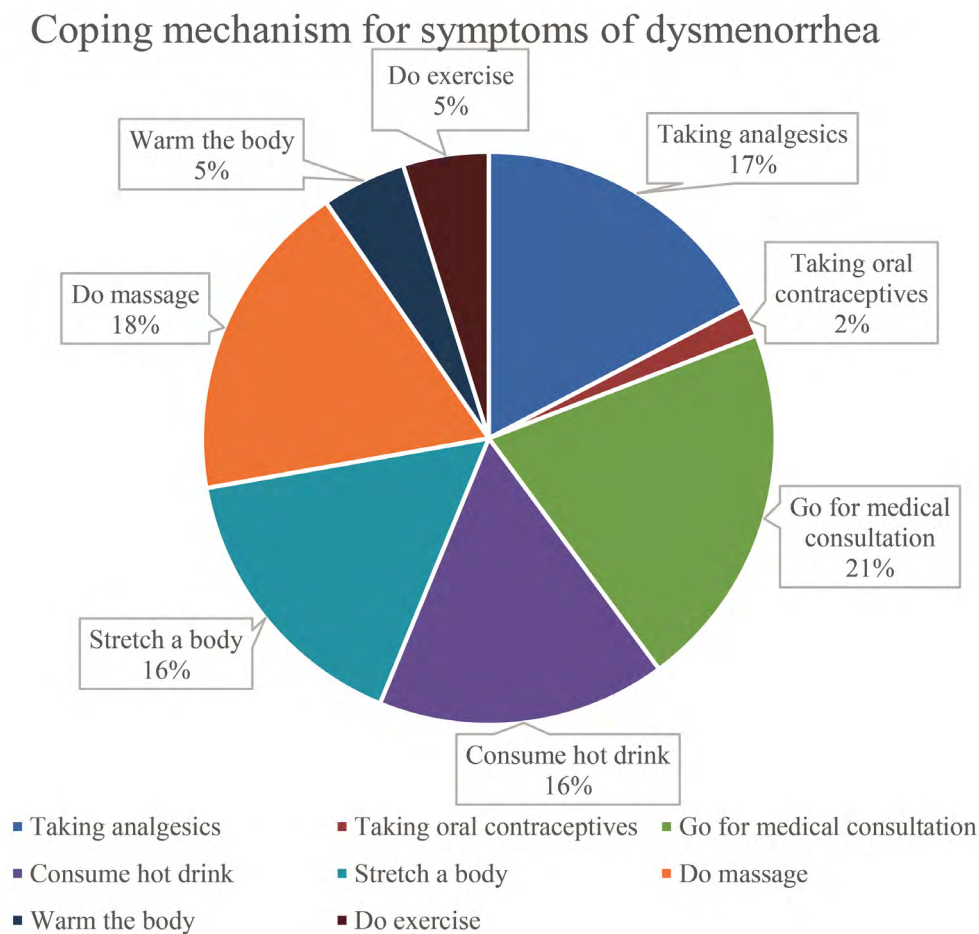
**Tab. 5** Coping strategies for symptoms of dysmenorrhea among respondents (n = 440)

Coping strategies for symptoms of dysmenorrhea		
Variables	Frequency (n)	Percentage (%)
<b>Take analgesics whenever experiencing dysmenorrhea</b>		
Yes	191	56.7
No	250	43.3
<b>Take oral contraceptives whenever experiencing dysmenorrhea</b>		
Yes	26	5.9
No	415	94.1
<b>Consuming a hot drink whenever experiencing dysmenorrhea</b>		
Yes	299	67.8
No	142	32.2
<b>Stretching body whenever experiencing dysmenorrhea</b>		
Yes	235	53.3
No	206	46.7
<b>Massaging whenever experiencing dysmenorrhea</b>		
Yes	231	52.4
No	210	47.6
<b>Warming body whenever experiencing dysmenorrhea</b>		
Yes	262	59.4
No	179	40.6
<b>Exercising whenever experiencing dysmenorrhea</b>		
Yes	69	15.6
No	372	84.4
<b>Going for medical consultation whenever experiencing dysmenorrhea</b>		
Yes	70	15.9
No	371	84.1

**Table 5** listed numerous coping strategies for dealing with dysmenorrhea symptoms in a population. 56.7% of people took analgesics to treat pain, whereas 43.3% did not. Oral contraception was infrequently used as a treatment option, with only 5.9% reporting use and 94.1% avoiding it. During dysmenorrhea, the majority (67.8%) preferred hot liquids, while 53.3% stretched their bodies to relieve discomfort. Similarly, 52.4% used massage therapy to relieve discomfort, and 59.4% used body-warming techniques. However, just 15.6% exercised as a coping mechanism, whereas a huge majority (84.4%) avoided physical activity. This data showed

that, while most people relied on easy self-care measures like hot drinks, stretching, and warming techniques, the usage of medicine and professional medical aid was quite low, with physical activity being the least popular means of dealing with dysmenorrhea. In short, this data proved that there was significant variation in the coping mechanisms used for the management of dysmenorrhea among females aged 18 to 50 years old in Malaysia, which rejected the null hypothesis that stated there was no significant variation in the coping mechanisms used.



**Fig. 2** Pie chart for coping strategies for symptoms of dysmenorrhea among respondents (n = 440)

**Figure 2** pie chart showed numerous coping strategies women used to treat discomfort due to menstrual cramps. Consuming a hot drink was the most favoured approach, with 67.8% of respondents, followed by warming up (59.4%) and stretching (53.3%) their body. Massages were a popular alternative, with 52.4% choosing this method. The use of analgesics (43.3%), exercise (15.6%), and medical consultation (15.9%) were the less favoured approaches. Oral contraceptives were the least used method, accounting for only 5.9%. The pie chart indicated women preferred non-pharmacological therapies such as hot liquids, body warming, and stretching, compared to using medical interventions such as analgesics, seeking medical counsel, or using oral contraceptive pills.

According to **Table 6**, there were no significant associations between age and intensity of dysmenorrhea ( $p = 0.547$ ), while Body Mass Index (BMI) had a strong association with the severity of dysmenorrhea. Higher BMI was linked to increased dysmenorrhea severity ( $p = 0.003$ , OR 13.329). Nationality and living environment had no significant effect on the severity of dysmenorrhea ( $p = 0.980$  and  $p = 0.905$ , respectively). Ethnicity, particularly with Malays reporting the highest severity ( $p = 0.003$ , OR 27.164). Educational level and occupation showed no significant associations ( $p = 0.410$  and  $p = 0.773$ ). Economic status indicated that lower economic groups (B40) experienced more severe dysmenorrhea ( $p = 0.046$ , OR 5.989).

**Table 7** discussed the association between the intensity of dysmenorrhea and various characteristics, including situations that triggered or intensified menstrual pain. The duration of pain test revealed no significant difference between mild-moderate and severe dysmenorrhea groups ( $p = 0.329$ ), although severe dysmenorrhea had a higher odds ratio (5.701) for lasting longer. The chi-square test for menstrual discomfort showed a significant difference ( $p < 0.001$ ) between groups, with an odds ratio of 18.324 indicating those with mild-to-moderate dysmenorrhea were more likely to report higher discomfort levels. The degree of dysmenorrhea correlated significantly with a family history of the condition ( $p < 0.001$ ). The odds ratio of 18.268 suggested individuals with a family history were significantly more likely to suffer from severe dysmenorrhea than those without. There was no discernible variation in the rhythmicity of the monthly cycle (normal, polymenorrhea, menorrhagia) between mild-moderate and severe dysmenorrhea ( $p = 0.389$ ). A slight non-significant tendency for severe dysmenorrhea to link to aberrant cycle rhythmicity was indicated by the odds ratio of 1.820. All situations (full bladder, urinating, bowel movement, walking, being seated, lifting weights) showed a highly significant association with severe dysmenorrhea ( $p < 0.001$ ). The odds ratios were high, suggesting individuals with severe dysmenorrhea were much more likely to experience pain from these circumstances. There was no significant difference in pain experienced during sexual

**Tab. 6** Association between intensity of dysmenorrhea and sociodemographic characteristics of the respondents by using chi-square test (n = 440)

Variables	Mild- moderate dysmenorrhea n (%)	Severe dysmenorrhea n (%)	$\chi^2$ (df)	p-value	Odds Ratio
<b>Age (years)</b>			1.208 (2)	0.547	1.214
18-28	153 (51.7)	82 (56.9)			
29-39	114 (38.5)	48 (33.3)			
40-50	29 (9.8)	14 (9.7)			
<b>BMI</b>			13.708 (3)	0.003	13.329
Underweight (< 18.5 kg/m <sup>2</sup> )	23 (7.8)	23 (16.2)			
Normal (18.5-24.9 kg/m <sup>2</sup> )	151 (51.5)	56 (39.4)			
Overweight (25.0-29.9 kg/m <sup>2</sup> )	57 (19.5)	40 (28.2)			
Obese (> 29.9 kg/m <sup>2</sup> )	62 (21.2)	23 (16.2)			
<b>Nationality</b>			0.001 (1)	0.980	0.001
Malaysian	267 (90.2)	130 (90.3)			
Non- Malaysian	29 (9.8)	14 (9.7)			
<b>Ethnicity</b>			21.132 (3)	0.003	27.164
Malay	174 (58.8)	98 (68.1)			
Chinese	35 (11.8)	6 (4.2)			
Indian	69 (23.3)	36 (25)			
Others	18 (6.1)	4 (2.7)			
<b>Educational Level</b>			2.884 (3)	0.410	3.059
Primary Education (Primary School)	1 (0.3)	1 (0.7)			
Secondary Education (Secondary School)	43 (14.5)	17 (11.8)			
Tertiary Education (Foundation, diploma, degree, and postgraduate programmes)	252 (85.1)	125 (86.8)			
No schooling	0 (0)	1 (0.7)			
<b>Occupation</b>			0.516 (2)	0.773	0.520
Employed	159 (53.7)	82 (56.9)			
Unemployed	43 (14.5)	18 (12.5)			
Students	94 (31.8)	44 (30.6)			
<b>Economic Status per month</b>			6.154 (2)	0.046	5.989
B40 (< RM 5,250)	162 (54.7)	80 (55.6)			
M40 (RM 5,250- RM 11,819)	106 (35.8)	40 (27.8)			
T20 (> RM 11,819)	28 (9.5)	24 (16.7)			
<b>Living Environment</b>			0.014 (1)	0.905	0.014
Urban	48 (16.2)	24 (16.7)			
Rural	248 (83.8)	120 (83.3)			

Significant at  $p < 0.05$

activity between mild-moderate and severe dysmenorrhea ( $p = 0.238$ ), although the odds ratio (4.108) indicated that individuals with severe dysmenorrhea may be somewhat more likely to experience pain during intercourse. This finding was not statistically significant, suggesting random variation. A strong link existed between dysmenorrhea intensity and pain experienced while walking ( $p < 0.001$ ), with an odds ratio of 98.479 indicating individuals with severe dysmenorrhea were much more likely to feel pain while walking. Similarly, there was a significant difference in pain while seated ( $p < 0.001$ ) and while lifting weights ( $p < 0.001$ ), with odds ratios of 113.908 and 105.187, respectively, showing that severe dysmenorrhea strongly associated with increased pain during these activities.

The chi-square test results revealed significant associations between factors such as the amount of menstrual pain, family history, and specific pain-triggering situations with severe dysmenorrhea. However, duration of pain and menstrual

cycle rhythmicity did not show statistically significant differences between the severity groups. These findings suggested that family history and external triggers played crucial roles in the intensity of dysmenorrhea. Table 7 also examined how dysmenorrhea affected various life aspects. Individuals with severe dysmenorrhea reported a much higher degree of disruption in their daily routines than those with milder symptoms. The odds ratio of 73.039 indicated that individuals suffering from severe dysmenorrhea were more than 70 times more likely to experience disruptions, with a p-value under 0.001 confirming this statistically significant difference. This showed severe dysmenorrhea could greatly diminish a person's ability to carry out daily tasks.

The ability to stay focused in class was heavily compromised for those with severe dysmenorrhea. Individuals with severe dysmenorrhea were 45.279 times more likely to experience attention problems during class than those with

**Tab. 7** Association between intensity of dysmenorrhea and characteristics of dysmenorrhea among the respondents by using chi-square test (n = 440)

Variables	Mild- moderate dysmenorrhea n (%)	Severe dysmenorrhea n (%)	x <sup>2</sup> (df)	p-value	Odds Ratio
<b>Duration of pain</b>			4.615 (4)	0.329	5.701
< 1 day	11 (3.7)	2 (1.4)			
1-5 days	277 (93.6)	137 (95.1)			
6-9 days	5 (1.7)	5 (3.5)			
> 9 days	2 (0.7)	0 (0.0)			
<b>Amount of menstrual pain</b>			19.479 <sup>a</sup> (2)	0.000	18.324
Small (< 5)	127 (42.9)	45 (31.3)			
Moderate (5-6)	154 (52.0)	72 (51.4)			
Large (> 7)	15 (5.1)	25 (17.4)			
<b>Family history of dysmenorrhea</b>			18.416 <sup>a</sup> (2)	0.000	18.268
No	119 (40.2)	37 (25.7)			
Unknown	83 (28.0)	31 (21.5)			
Yes	94 (31.8)	76 (52.8)			
<b>Rhythmicity menstrual cycle</b>			1.888 <sup>a</sup> (2)	0.389	1.820
Normal	245 (82.8)	113 (78.5)			
Polymenorrhea	20 (6.8)	15 (10.4)			
Menorrhagia	31 (10.5)	16 (11.1)			
<b>Situations which trigger or intensify menstrual pain</b>					
<b>Pain with full bladder</b>			47.362 <sup>a</sup> (3)	.000	45.960
<b>None</b>	153 (51.7)	48 (33.3)			
Mild	73 (24.7)	21 (14.6)			
Moderate	66 (22.3)	56 (38.9)			
Severe	4 (1.4)	19 (13.2)			
<b>Pain while urinating</b>			21.760 <sup>a</sup> (3)	.000	21.090
None	199 (67.2)	69 (47.9)			
Mild	64 (21.6)	43 (29.9)			
Moderate	31 (10.5)	24 (16.7)			
Severe	2 (0.7)	8 (5.6)			
<b>Pain with bowel movement</b>			43.161 <sup>a</sup> (3)	.000	41.877
None	133 (44.9)	34 (23.6)			
Mild	85 (28.7)	34 (23.6)			
Moderate	65 (22.0)	46 (31.9)			
Severe	13 (4.4)	30 (20.8)			
<b>Pain while having sexual relationship</b>			4.231 <sup>a</sup> (3)	0.238	4.108
None	226 (76.4)	107 (74.3)			
Mild	44 (14.9)	16 (11.1)			
Moderate	20 (6.8)	17 (11.8)			
Severe	6 (2.0)	4 (2.8)			
<b>Pain when walking</b>			99.728 <sup>a</sup> (3)	.000	98.479
None	118 (39.9)	23 (16.0)			
Mild	88 (29.7)	18 (12.5)			
Moderate	75 (25.3)	47 (32.6)			
Severe	15 (5.1)	56 (38.9)			
<b>Pain while being seated</b>			114.781 <sup>a</sup> (3)	.000	113.908
None	102 (34.5)	18 (12.5)			
Mild	96 (32.4)	18 (12.5)			
Moderate	84 (28.4)	46 (31.9)			
Severe	48 (10.9)	28 (6.36)			
<b>Pain while lifting weights</b>			105.571 <sup>a</sup> (3)	.000	105.187
None	126 (42.6)	24 (16.7)			
Mild	88 (29.7)	16 (11.1)			
Moderate	68 (23.0)	50 (34.7)			
Severe	14 (4.7)	54 (37.5)			

**Types of interference of dysmenorrhea**

<b>Interference with daily life</b>				66.620 (1)	< 0.001	73.039
Yes	134 (45.3)	124 (86.1)				
No	162 (54.7)	20 (13.9)				
<b>Interference with attention in class</b>				43.297 (2)	< 0.001	45.279
Yes	103 (34.8)	96 (66.7)				
No	82 (27.7)	12 (8.3)				
Not applicable	111 (37.5)	36 (25.0)				
<b>Interference with class work</b>				42.557 (2)	< 0.001	43.910
Yes	101 (34.1)	95 (66.0)				
No	106 (35.8)	19 (13.2)				
Not applicable	89 (30.1)	30 (20.8)				
<b>Interference with social activities</b>				60.296 (1)	< 0.001	67.279
Yes	148 (50.0)	127 (88.2)				
No	148 (50.0)	17 (11.8)				
<b>Interference with sports</b>				50.307 (1)	< 0.001	56.486
Yes	162 (54.7)	128 (88.9)				
No	134 (45.3)	16 (11.1)				
<b>Interference with paid work</b>				71.864 (1)	< 0.001	73.748
Yes	93 (31.4)	107 (74.3)				
No	203 (68.6)	37 (25.7)				
<b>Interference with family relation</b>				47.191 (1)	< 0.001	45.490
Yes	53 (17.9)	71 (49.3)				
No	243 (82.1)	73 (50.7)				
<b>Interference with sexual relation</b>				16.912 (1)	< 0.001	16.266
Yes	54 (18.2)	52 (36.1)				
No	242 (81.8)	92 (63.9)				
<b>Interference with partner relation</b>				23.192 (1)	< 0.001	22.375
Yes	59 (19.9)	60 (41.7)				
No	237 (80.1)	84 (58.3)				

Significant at  $p < 0.05$

milder symptoms, supported by a p-value below 0.001. These findings suggested that dysmenorrhea significantly impacted academic performance, potentially leading to issues like poor grades or increased absenteeism.

In terms of classwork interference, 34.1% of those with mild to moderate dysmenorrhea reported issues, while 66.0% of individuals with severe dysmenorrhea did, with a chi-square value of 42.557 and a p-value of less than 0.001 indicating a statistically significant association. Similarly, severe dysmenorrhea significantly affected work performance, with p-values below 0.001 and an odds ratio of 73.748, suggesting that individuals with severe dysmenorrhea were over five times more likely to report difficulties at work. Dysmenorrhea also impacted social activities and sports participation. Individuals with severe dysmenorrhea were much more likely to experience interference in social events (OR 67.279) and sports (OR 56.486), with p-values below 0.001. Additionally, family and sexual relationships were notably affected, with individuals with severe dysmenorrhea being 45.490 times more likely to face family relationship difficulties and 16.266 times more likely to experience interference in their sexual relationships. Lastly, regarding partner relationships, among those with mild to moderate dysmenorrhea, 19.9% reported interference, while 41.7% of those with severe dysmenorrhea did. The chi-square

value of 23.192 with a p-value less than 0.001 indicated a statistically significant association.

Based on the Chi-square test results, severe dysmenorrhea significantly correlates with absenteeism due to various symptoms, as evidenced by a series of statistical analyses. Nausea and vomiting show particularly high absenteeism rates, with 28.5% and 20.8% of those experiencing severe dysmenorrhea absent from work, compared to 7.4% and 3.4% in mild-moderate cases, respectively ( $p = 0.000$ ,  $\chi^2 = 45.865$  and  $p = 0.000$ ,  $\chi^2 = 46.659$ ). Fatigue is another major factor, affecting 51.4% of severely affected individuals versus 17.9% in milder cases ( $p = 0.000$ ,  $\chi^2 = 53.858$ ). Dizziness and headaches also demonstrate significant absenteeism rates of 36.1% and 37.5%, respectively, among those with severe dysmenorrhea ( $p = 0.000$  for both). Other symptoms such as diarrhea (21.5%), depression (24.3%), irritability (29.9%), insomnia (21.5%), and inability to concentrate (35.4%) further contribute to absenteeism, all showing significant statistical associations ( $p = 0.000$ ). Conversely, lifestyle factors like smoking, breakfast consumption, meal frequency, and exercise frequency do not show significant relationships with absenteeism, although sleep duration does correlate significantly with absenteeism among those with severe dysmenorrhea ( $p = 0.036$ ).

**Tab. 8** Association between severity of dysmenorrhea and menstrual symptoms and its association between severity of dysmenorrhea and lifestyle habits by using chi-square test (n = 440)

Variables	Mild- moderate dysmenorrhea n (%)	Severe dysmenorrhea n (%)	x <sup>2</sup> (df)	p-value	Odds Ratio
<b>Menstrual symptoms and it leads to absenteeism</b>					
<b>Feeling of nausea</b>			45.865 (2)	0.000	44.620
No	179 (60.5)	47 (32.6)			
Yes, does not lead to absenteeism	95 (32.1)	56 (38.9)			
Yes, lead to absenteeism	22 (7.4)	41 (28.5)			
<b>Experience vomiting</b>			46.659 (2)	0.000	44.193
No	258 (87.2)	88 (61.1)			
Yes, does not lead to absenteeism	28 (9.5)	26 (18.1)			
Yes, lead to absenteeism	10 (3.4)	30 (20.8)			
<b>Feeling fatigue</b>			53.858 (2)	0.000	52.375
No	45 (15.2)	9 (6.3)			
Yes, does not lead to absenteeism	198 (66.9)	61 (42.4)			
Yes, lead to absenteeism	53 (17.9)	74 (51.4)			
<b>Experience dizziness</b>			37.307 (2)	0.000	35.789
No	154 (52.0)	45 (31.3)			
Yes, does not lead to absenteeism	106 (35.8)	47 (32.6)			
Yes, lead to absenteeism	36 (12.2)	52 (36.1)			
<b>Experience headaches</b>			41.132 (2)	0.000	38.923
No	135 (45.6)	44 (30.6)			
Yes, does not lead to absenteeism	127 (42.9)	46 (31.9)			
Yes, lead to absenteeism	34 (11.5)	54 (37.5)			
<b>Experience diarrhea</b>			18.207 (2)	0.000	17.484
No	160 (54.1)	55 (38.2)			
Yes, does not lead to absenteeism	111 (37.5)	58 (40.3)			
Yes, lead to absenteeism	25 (8.4)	31 (21.5)			
<b>Feeling depressed</b>			20.561 (2)	0.000	19.761
No	146 (49.3)	48 (33.3)			
Yes, does not lead to absenteeism	122 (41.2)	61 (42.4)			
Yes, lead to absenteeism	28 (9.5)	35 (24.3)			
<b>Feeling irritable</b>			19.668 (2)	0.000	18.833
No	56 (18.9)	17 (11.8)			
Yes, does not lead to absenteeism	202 (68.2)	84 (58.3)			
Yes, lead to absenteeism	38 (12.8)	43 (29.9)			
<b>Experience insomnia</b>			23.559 (2)	0.000	21.958
No	184 (62.2)	72 (50.0)			
Yes, does not lead to absenteeism	94 (31.8)	41 (28.5)			
Yes, lead to absenteeism	18 (6.1)	31 (21.5)			
<b>Unable to concentrate</b>			59.801 (2)	0.000	58.910
No	132 (44.6)	26 (18.1)			
Yes, does not lead to absenteeism	139 (47.0)	67 (46.5)			
Yes, lead to absenteeism	25 (8.4)	51 (35.4)			
<b>Lifestyle habits</b>					
<b>Smoking</b>			0.004 (1)	0.952	0.004
Yes	14 (4.7)	7 (4.9)			
No	282 (95.3)	137 (95.1)			
<b>Hours of sleep per day</b>			4.389 (1)	0.036	4.350
≥ 7 hours	103 (34.8)	65 (45.1)			
< 7 hours	193 (65.2)	79 (54.9)			
<b>Taking breakfast every morning</b>			2.603 (1)	0.107	2.601
Yes	164 (55.4)	68 (47.2)			
No	132 (44.6)	76 (52.8)			
<b>Taking in between meals</b>			0.331 (1)	0.565	0.331
Yes	173 (58.4)	80 (55.6)			
No	123 (41.6)	64 (44.4)			
<b>Duration of exercise per week</b>			1.192 (2)	0.551	1.196
≥ 2 times, 30 minutes a week					
< 2 times, 30 minutes a week	91 (30.7)	38 (26.4)			
None	125 (42.2)	68 (47.2)			
	80 (27.0)	38 (26.4)			

Significant at  $p < 0.05$

**Tab. 9** Association between coping strategies for symptoms of dysmenorrhea and severity of dysmenorrhea by using chi-square test (n = 440)

Variables	Mild- moderate dysmenorrhea n (%)	Severe dysmenorrhea n (%)	$\chi^2$ (df)	p-value	Odds Ratio
<b>Coping Mechanism</b>					
<b>Analgesics during pain</b>			92.223 (1)		94.626
No	215 (72.6)	35 (24.3)		< .001	
Yes	81 (27.4)	109 (75.7)		< .001	
<b>Oral contraceptives during pain</b>			1.152 (1)		1.108
No	281 (94.9)	133 (92.4)		0.283	
Yes	151 (5.1)	11 (7.6)		0.283	
<b>Medical consultation during pain</b>			48.578 (1)		45.571
No	274 (92.6)	96 (66.7)		< 0.001	
Yes	22 (7.4)	48 (33.3)		< 0.001	
<b>Hot drink during dysmenorrhea</b>			7.347 (1)		7.581
No	108 (36.5)	34 (23.6)		0.007	
Yes	188 (63.5)	110 (76.4)		0.007	
<b>Stretching your body during dysmenorrhea</b>			0.396 (1)		0.397
No	141 (47.6)	64 (44.4)		0.529	
Yes	155 (52.4)	80 (55.6)		0.529	
<b>Massage during dysmenorrhea</b>			1.696 (1)		1.700
No	147 (49.7)	62 (43.1)		0.193	
Yes	149 (50.3)	82 (56.9)		0.193	
<b>Warming your body during dysmenorrhea</b>			11.762 (1)		12.044
No	137 (46.3)	42 (29.2)		< 0.001	
Yes	159 (53.7)	102 (70.8)		< 0.001	
<b>Exercise during dysmenorrhea</b>			3.382 (1)		3.555
No	243 (82.1)	128 (88.9)		0.066	
Yes	53 (17.9)	16 (11.1)		0.066	

Significant at  $p < 0.05$

Analgesic use among women with mild to moderate dysmenorrhea showed that 215 (72.6%) did not use analgesics, while 81 (27.4%) did. In severe cases, 35 (24.3%) did not use analgesics, compared to 109 (75.7%) who did. The chi-square value of  $\chi^2 = 92.223$  and a p-value of  $< 0.001$  indicate a strong reliance on pain relief medications in severe cases. Regarding the use of oral contraceptives, 281 (94.9%) of those with mild to moderate dysmenorrhea did not use them, compared to 133 (92.4%) in the severe group. The chi-square value of  $\chi^2 = 1.152$  and  $p = 0.283$  show no statistical significance. Additionally, 96 (66.7%) women with severe dysmenorrhea did not consult a doctor, compared to 274 (92.6%) in the mild to moderate group. This resulted in a chi-square value of  $\chi^2 = 48.578$  and  $p < 0.001$ , highlighting an increased need for professional help in severe cases. In terms of hot drink consumption, 34 (23.6%) with severe dysmenorrhea did not consume hot drinks, compared to 188 (63.5%) in the mild to moderate cases, supported by  $\chi^2 = 7.347$  and  $p = 0.007$ . Stretching showed no significant difference between groups ( $\chi^2 = 0.396$ ,  $p = 0.529$ ), and massage usage also did not differ significantly ( $\chi^2 = 1.696$ ,  $p = 0.193$ ). A significant increase in warming techniques was observed, with only 42 (29.2%) of those with severe dysmenorrhea not using them, compared to 137 (46.3%) in the mild to moderate group ( $\chi^2 = 11.762$ ,  $p < 0.001$ ).

Finally, there was less duration of exercise among women with severe dysmenorrhea, as 128 (88.9%) did not exercise; however, this did not show statistical significance ( $\chi^2 = 3.382$ ,  $p = 0.066$ ).

## Discussion

This study aimed to investigate the socio-demographic characteristics of respondents of Malaysia regarding the prevalence and impact of dysmenorrhea, specifically among females aged 18 to 50 years. Initially, 474 participants were recruited, of whom 61.8% identified as Malay. Although estimating the prevalence of dysmenorrhea in this population proved challenging due to non-probability convenience sampling, the findings suggested a significant prevalence rate of around 93%. Among the respondents, 43% experienced moderate dysmenorrhea, 30.4% reported severe dysmenorrhea, 19.4% had mild symptoms, and 7.2% did not experience dysmenorrhea at all.

The study revealed that severe dysmenorrhea was most common among women aged 18-28, with a prevalence of 56.9%. In comparison, 33.3% of the 29-39 age group reported severe symptoms, while only 9.7% were in the 40-50 age group. Although younger women reported higher rates of mild to moderate dysmenorrhea, a chi-square test ( $\chi^2 = 1.208$ ,  $p = 0.547$ ) showed no significant correlation

between age and the severity of dysmenorrhea, suggesting that age did not substantially influence the likelihood of experiencing severe symptoms. However, existing literature, including a study by Philip et al. (2016), indicated that dysmenorrhea is more prevalent among younger females, as younger women, especially those in their late teens and early twenties, typically experience higher levels of hormonal fluctuations during their reproductive years. Prostaglandins, hormone-like substances that trigger uterine contractions, are often produced in greater quantities during menstruation in younger women (12).

The relationship between the severity of dysmenorrhea and various socio-demographic factors such as age and body mass index (BMI) was analysed using a chi-square test. No significant association was observed between age groups and dysmenorrhea intensity ( $p = 0.547$ ). However, a significant association was found between BMI and dysmenorrhea severity ( $p = 0.003$ ), suggesting that overweight or obese women were more likely to experience severe dysmenorrhea. This finding aligns with existing literature that associates higher BMI with increased inflammatory markers, which may contribute to more severe menstrual pain. The odds ratio of 13.329 indicated that being overweight or obese significantly increased the likelihood of severe dysmenorrhea. Furthermore, previous literatures noted that lower BMI among younger females correlated with higher dysmenorrhea severity and prevalence, suggesting a greater risk for younger women (13,14).

Ethnicity demonstrated a significant correlation ( $p = 0.003$ , OR 27.164), indicating that Malay women reported higher severity of dysmenorrhea compared to women of other ethnicities. Several factors could explain this increased prevalence among Malay women. Cultural, genetic, or lifestyle differences might contribute to this outcome. For instance, socio-cultural practices, dietary habits, or genetic predispositions unique to the Malay population might influence the severity and experience of dysmenorrhea. Additionally, other factors like health-seeking behaviour, access to healthcare, or awareness about dysmenorrhea could play a role in how symptoms were perceived and reported. According to Rana Mohamad Bakro et al. (2023), about 50% of those experiencing severe dysmenorrhea were Malays (4). Economic status also showed a significant correlation ( $p = 0.046$ , OR 5.989), suggesting that women in the T20 income category reported more severe dysmenorrhea. No significant differences were noted in educational level ( $p = 0.410$ , OR 3.059), occupation ( $p = 0.773$ , OR 0.520), or living environment ( $p = 0.905$ , OR 0.014), and nationality showed no significant difference in severity ( $p = 0.980$ , OR 0.001) (15).

The study also examined the association between characteristics of dysmenorrhea and severity. The duration of pain showed no significant association ( $p = 0.329$ ) with dysmenorrhea severity. However, the intensity of menstrual pain was strongly associated with dysmenorrhea severity ( $p < 0.001$ ), shown that those with higher pain scores ( $> 7$ ) were more likely to report severe dysmenorrhea. According to the previous studies, there was a significant association between young age (18-24 years) and severity of dysmenorrhea (6,7). However, those findings were contrary with the findings from our study in which age factors had no significant association with severity of dysmenorrhea

with  $p$ -value of 0.329 ( $> 0.05$ ). A family history of dysmenorrhea also played a crucial role ( $p < 0.001$ ), where individuals with a family history were more likely to experience severe dysmenorrhea, suggesting a possible genetic predisposition. Ju et al. (2014) reported that a family history of dysmenorrhea strongly increased its risk, with odds ratios ranging between 3.8 and 20.7. Additionally, situational factors such as pain related to a full bladder, bowel movements, or walking were significantly associated with severe dysmenorrhea ( $p < 0.001$ ), underscoring the exacerbating effects of these situations on pain perception (16).

The study found that dysmenorrhea severely disrupted daily life. Individuals with severe dysmenorrhea were over 70 times more likely to experience interruptions in their routines compared to those with mild to moderate symptoms, a statistically significant finding ( $p < 0.001$ ). Students with severe dysmenorrhea struggled significantly to maintain focus in class, reflected by an odds ratio of 45.279, along with strong statistical support. Additionally, 66% of those with severe symptoms reported interference with classwork, compared to only 34.1% of those with milder symptoms, supported by an odds ratio of 43.910. In the workplace, individuals with severe dysmenorrhea were over five times as likely to face difficulties, negatively impacting their productivity. The condition also limited participation in social and sports activities, with odds ratios of 67.279 and 56.486, respectively, both statistically significant (17).

Interpersonal relationships were similarly affected, with a 45.490 times greater likelihood of issues in family relationships and a 16.266 times greater likelihood of challenges in sexual relationships among those with severe dysmenorrhea. These findings were consistent with the findings from previous study done among Serbian university students indicated that 41.7% of individuals with severe dysmenorrhea experienced partner relationship interference, in contrast to 19.9% of those with milder symptoms, highlighting a significant impact (OR 22.375) (17). Overall, a clear and statistically significant association was observed between the severity of dysmenorrhea and its detrimental effects on multiple facets of life (17-19).

Additionally, the study explored the relationship between dysmenorrhea severity, menstrual symptoms, and absenteeism. A significant relationship was noted between symptoms like nausea, vomiting, and fatigue with absenteeism, particularly in cases of severe dysmenorrhea ( $p < 0.001$ ). Women experiencing vomiting or fatigue were more likely to miss activities due to their symptoms, suggesting a heightened burden of dysmenorrhea on daily functioning. Philip et al. (2016) indicated that dysmenorrhea negatively affected quality of life, with symptoms such as mood fluctuations, reduced academic performance, and strained relationships reported by respondents (12). Durand et al. (2021) also supported the notion that dysmenorrhea adversely impacts quality of life, stating that pain catastrophizing significantly predicted both pain intensity and interference with daily activities (20).

Lifestyle habits had a limited association with the intensity of dysmenorrhea. For instance, smoking and exercise showed no significant correlation with the severity of dysmenorrhea ( $p > 0.05$ ). Ju et al. (2013) found inconclusive evidence regarding modifiable factors such as cigarette smoking, diet, obesity, depression, and abuse. However,

sleep duration was significant ( $p = 0.036$ ), as individuals sleeping less than seven hours a day were more likely to report severe dysmenorrhea, suggesting that sleep quality may influence pain perception or recovery (16).

The study also analysed coping strategies utilized by women suffering from dysmenorrhea and their effectiveness concerning pain intensity. The use of analgesics showed a strong association with severe dysmenorrhea ( $p < 0.001$ ), with many women experiencing severe pain using analgesics during their periods. Medical consultation was common among women with severe dysmenorrhea ( $p < 0.001$ ), indicated that individuals with more intense pain were more likely to seek professional help. Non-pharmacological methods, such as warming the body during dysmenorrhea ( $p < 0.001$ ), were frequently employed by those experiencing severe symptoms. This suggests that individuals facing higher pain intensity often resort to multiple coping mechanisms, including medical interventions and self-care strategies, to alleviate symptoms. These findings were consistent with the findings by Durand et al. (2021) indicated that non-pharmacological strategies, such as heat application (79%) and rest (60.4%), were commonly favoured, with analgesics being used by 79.5% of participants, primarily paracetamol (60.5%), despite its limited effectiveness (20,21). Moreover, there were some effective strategies to improve dysmenorrhea symptoms such as regular exercises, dietary adjustments by increasing the intake of low-fat foods to reduce menstrual pain, and some alternative strategies were suggested by previous literatures (9). For instances, psychological and stress management therapy such as cognitive behavioural therapy (CBT) and stress reduction therapy were also effective. Furthermore, some literatures suggested that by providing comprehensive menstrual health education and fostering open discussion in school and communities could empower individuals to manage their symptoms more effectively (3,10).

In analysing the results, a few unexpected and expected findings emerged during the research. Notably, regarding age, there was one participant aged 11 and three participants over 50, which fell outside the target demographic of 18 to 50 years. Furthermore, the open-answer format for the age section led to some responses that did not align with the question. Additionally, despite targeting females, the study attracted some male participants, resulting in a final sample size reduction from 480 to 440 after screening out irrelevant responses.

Overall, the statistical analysis indicated significant findings regarding dysmenorrhea prevalence and its impact on daily activities among the study population. The prevalence rate of dysmenorrhea was determined to be 65%, reflecting the substantial burden of this condition. Findings indicated that females with dysmenorrhea significantly influenced daily activities such as work performance, social engagements,

and physical activities compared to those without the disorder. Existing research literature supports these findings, revealing a significant rate of dysmenorrhea, although the level of impact on daily living varied due to geographical and cultural differences (15,22).

### Conclusion

To conclude, this study shows that dysmenorrhea has a significant impact on the quality of life of most women experiencing moderate to severe pain lasting 1 to 3 days. Dysmenorrhea causes physical discomfort and affects daily activities such as walking, sitting, and social engagement. From the data collected, the presence of a family history was a notable factor as 31.8% of women who presented with mild to moderate symptoms of dysmenorrhea and 52.8% of women with severe dysmenorrhea have stated the same, most likely suggesting that there could be a genetic link. The menstrual pain was not limited to the pelvic area, as many individuals reported discomfort while walking, sitting, lifting weights, and during bowel movements, indicating that dysmenorrhea affects more than just the reproductive system. These findings highlight the need for interventions to alleviate pain and improve the daily functioning of life, particularly in areas like work, academics, and physical activities. Effective management strategies could greatly enhance the well-being of those affected by dysmenorrhea, thus reducing its overall burden for women. By using convenience sampling in our study, there was the potential for selection bias which can limit the generalizability of the findings, thereby introducing systematic differences that could skew the results. Therefore, future studies should consider employing probability sampling techniques to enhance the representativeness and generalizability of findings.

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