



Original Article

The Correlation between Pain's Level of Dysmenorrhea and Affected Activity: A Study of Young Women in Surakarta Residency

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ABSTRACT

Pain due to dysmenorrhea is often complained of by young women. This situation often affects daily activities, disrupts school activities, work, and social activities. The purpose of this study was to determine the correlation between the level of dysmenorrhoea pain and its results among young women in Surakarta. This study was a cross-sectional study involving 385 respondents who filled out a questionnaire about demographic data, dysmenorrhea, and its impact on activity. The most age group complaining about dysmenorrhea was 15-19 years old. The most of pain level was moderate pain, as much as 42.1%. Meanwhile, the lightest pain was mild pain, which was felt by 64.4% of respondents. All of the respondents were not married and had no sexual relations. Most body mass index was in the normal category, which is 64.9%. Of the 285 respondents, 79.2% experienced an impact on their activities due to dysmenorrhea. The most menarche age group was 12-14 years, and the most pain duration was 1-3 days. 89.9% have normal duration of menstruation. The results of statistical tests showed that the P-value <0.05. There was a correlation between pain level of dysmenorrhea and impacted activity among young women in Surakarta residency. Generally, menstrual pain is a common problem, but it needs to be managed.

GRAPHICAL ABSTRACT



<https://healthsoul.com/blog/dysmenorrhea-causes-and-treatment/>

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Introduction

Women with primary dysmenorrhea tend to have elevated prostaglandin levels, triggering more severe than normal uterine contractions. There is no known cause for the elevated prostaglandin levels. To ensure that their menstrual discomfort is not caused by such reproductive conditions such as endometriosis or fibroids, women with dysmenorrhea require a comprehensive medical review. Owing to various meanings of the disease, the prevalence of dysmenorrhea (painful menstrual cramps of uterine origin) is difficult to determine; prevalence rates range from 45 percent to 95 percent. However, irrespective of age and ethnicity, dysmenorrhea continues to be the most common gynecological disorder in women. The word dysmenorrhea comes from Greek, *dys*, which means difficult, pain, abnormal, *meno*, which means month, and *rrhea*, which means flow. Dysmenorrhea can be defined as a difficult menstrual flow or painful menstruation every month [1–3]. Dysmenorrhea is also called menstrual pain [4], which is a health problem that is complained of by most young women [5,6]. Dysmenorrhea can affect all ages and races and one of the causes of problems with the reproductive organs in the pelvic circumference [7].

Dysmenorrhea is grouped into two categories, namely primary dysmenorrhea and secondary dysmenorrhea. There are no pathological abnormalities in the female genitalia [8] in primary dysmenorrhea, while in secondary dysmenorrhea, gynecological abnormalities are found and can also occur during anovulatory menstrual cycles [9]. Primary dysmenorrhea can be treated with counseling, pain relief, and hormone therapy [10,11], generally occurs in young nulliparous women with normal pelvic reproductive organs examination [12,13]. Secondary dysmenorrhea is more common in women over 20 years of age. Common causes of secondary dysmenorrhea include endometriosis, inflammatory disease of the reproductive organs, use of intrauterine contraceptives (IUD), adenomyosis, fibroids (myoma), and endometrial polyps [5,14], ovarian cysts, intrauterine

adhesions or cervical stenosis [14]; [15]. According to the level of pain, dysmenorrhea is divided into mild, moderate, and severe pain. Based on the Visual Analogy Scale (VAS), pain intensity is described as no pain, mild pain, moderate pain, and severe pain. Based on the Visual Analogue Scale (VAS) measuring instrument, it has been recommended that there is no pain (0 - 4 mm), mild pain (5-44 mm), moderate pain (45-74 mm), and severe pain (75-100 mm). [11]. There is no normative value for VAS [16].

The prevalence of dysmenorrhea varies between countries, ranging from as low as 34% in Egypt to 94% in Oman [17]. Globally, more than 50% of puberty adolescents experience dysmenorrhea, with 10-20% experiencing severity [18]. The prevalence of dysmenorrhea in Indonesia is not certain. The incidence of dysmenorrhea in Indonesia is 64.25%, consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. About 75% of women experience mild or moderate pain intensity, and 25% of women experience severe pain that makes the patient helpless [19–21]. In West Java, around 8-10% of women of childbearing age experience dysmenorrhea [22]. In Jakarta, dysmenorrhea's prevalence is 87.5%, with mild pain at 20.48%, moderate pain at 64.76%, and severe pain at 14.76% [23]. The prevalence of dysmenorrhea in Surakarta is unknown and there are no studies on the prevalence of dysmenorrhea in Surakarta.

Symptoms of dysmenorrhea can interfere with health and activity. The main symptom is pain, especially around the genital area and/or the middle and lower abdomen. This is caused by an imbalance between the hormone's estrogen and progesterone. Other symptoms of dysmenorrhea are emesis or vomiting [6,24–26], diarrhea [24], stomach cramps, back pain, fatigue, weakness [6,23,26], discomfort, headaches [6,23], breast pain [23], joint pain, sleep disorders, and acne [6].

Dysmenorrhea has various effects on young women. The impact of dysmenorrhea includes barriers to social interaction and academic performance [27], long-standing tolerance

disorders, ability to attend school or work, activities in class [28]. Dysmenorrhea can affect concentration in class, sports activities, class participation, socialization, homework, test-taking skills, and a decrease in test scores [24]. In Indonesia, studies on the impact of primary dysmenorrhea have been carried out and it was found that dysmenorrhea causes absence from school [23,29,30]; disturbed activities, for example, outdoor activities, household chores, concentration, school/work, and sports [23]; and loss of productivity [30]. Various studies have been conducted, but no research has addressed the relationship between the level of dysmenorrhea pain and activity barriers. Therefore, this study aimed at the relationship between the level of dysmenorrhea pain and impacted activity among young women in Surakarta.

The study was done on the Pandemic of COVID-19, so the researchers adjusted it to health protocols related to the pandemic. This study observed health protocols during the COVID-19 pandemic. The researchers coordinated with youth organizations to help collect the required data. The first step was to send a permit/approval letter to the village head in each village. The purpose of this study was to determine the relationship between the level of dysmenorrhea pain and impacted activity among young women in Surakarta.

Material and methods

This study was conducted in Surakarta, Central Java, Indonesia. Surakarta was chosen because it is a small city with a high population of various ethnic groups. Surakarta has grown rapidly since the last decade as an education city. The young women are not only from the Javanese ethnic group but also from all over Indonesia and from abroad. The study design of this study was a quantitative cross-sectional study.

Surakarta has been chosen as the study location because it is the 5th ranked education city in Indonesia and is known as a city connected with culture and education. In this city, there are ten universities. As an education city, Surakarta has many young people and represents many ethnic

groups, from Javanese to Papuans, some of whom come from abroad. The cross-sectional study was conducted in September 2020. This study obtained ethical eligibility permission from the medical faculty of the Malaysian nationality university no: UKM/PPI/111/8/JEP-2020-179 dated 15 June 2020 and from Dr. Moewardi Surakarta Hospital with number 561/II/HPEC/2020 on 10 March 2020. The study population consisted of young women in the city of Surakarta. Surakarta is a city with an area of 46.01 km² and a population of 499,337. There are 63,164 young women aged 15-24 in Surakarta

(<https://dispendukcapil.surakarta.go.id/>, 2020). The population was selected using inclusion and exclusion criteria. The inclusion criteria were as follows: a) unmarried women aged 15-24 years and no sexual relationship; b) no history of reproductive disorders. The exclusion criteria were respondents whose menstrual cycles were irregular. Samples were selected based on a formula by [31].

$$s = X^2NP(1-P) + d^2(N-1) + X^2P(1-P) \quad (1)$$

s = sample size

X² = chi-square table value for 1 degree of freedom at the desired confidence level (3.841, from 1.96 x 1.96)

N = population size is 63,164, based on <https://dispendukcapil.surakarta.go.id>

P = proportion of population (unknown, so considered 0.50 as this will give the maximum sample size)

d = level of accuracy expressed as a proportion (0.05) [31]

$$\begin{aligned} n &= \frac{3.841 \times 63,164 \times 0.5 \times (1 - 0.5)}{0.05^2 (63,164 - 1) + 3.841 \times 0.5 (1 - 0.5)} \\ &= 381.784 \end{aligned}$$

The number of the sample shows respondents.

In this study, we used a researcher-made questionnaire. The questionnaire consists of demographic characteristics and their impacts. The data were collected through manual forms and google forms. The second step was to go to the village to collect data. The researcher explained the study objectives, the study process,

and assured the confidentiality of the data. Then, prospective respondents were approved to express their desire to participate. Furthermore, respondents were asked to fill out a questionnaire form. The questionnaire could be collected directly on that day or taken Home by the respondent and handed the following day. The next step was to collect the questionnaires, edit, code, test data quality, describe the data, and test the hypotheses. Data analysis was carried out using the SPSS software. The univariate analysis

only characterized respondents, distribution of pain levels. The bivariate analysis explained the relationship between the level of dysmenorrhea pain and affected activity in young women in Surakarta.

Result and Dissection

385 respondents participated in the study. The respondents' characteristics are given below based on age, height and weight, age of menarche, and activity barriers.

Table 1: Respondent Characteristics

No	Characteristics	Frequency	%	Mean	SD
1	Aged (years)			19.55	2.2
	15-19	206	53.5		
	20-24	179	46.5		
2	Pain (worse)			5.88	2.36
	0 - 3	68	17.7		
	04 - 06	162	42.1		
	07 - 10	155	40.3		
3	Pain (mild)			2.87	1.8
	0 - 3	248	64.4		
	04 - 06	122	31.7		
	07 - 10	15	3.9		
4	Body mass index			20.75	3.67
	< 18.5	92	23.9		
	18.5 - 24.99	250	64.9		
	25.00 - 29.99	34	8.8		
	>30.00	9	2.3		
5	Impacted to activity				
	Impacted	305	79.2		
	No impacted	80	20.8		
6	Age of menarche (years)			12.54	1.71
	09 -11	76	19.74		
	12 - 14	271	70.39		
	15 - 17	37	9.61		
	18 - 19	1	0.26		
7	Menstrual Cycle				
	Normal	295	76.6		
	Not normal	90	23.4		
8	Duration of menstruation				
	Normal	346	89.9		
	Not normal	39	10.1		
9	Pain duration				
	<1 day	115	29.9		
	1 - 3 days	212	55.1		
	> 4 days	58	15.1		

Based on Table 1, the highest number of age was 15-19 years. For the heaviest pain, between moderate pain and severe pain, the percentage is

almost the same. Meanwhile, for the lightest pain, the largest percentage was mild pain. As for body mass index, most of the respondents were 18.5 - 24.99, which was categorized as normal.

Regarding impact on daily activities, 79.2% experienced disturbances in daily activities due to dysmenorrhea. Most of the respondents have a menarche age of 12-14 years. Menstrual cycle, 76.6 ^ normal, as well as menstrual duration, by

89.9% is also normal. Meanwhile, the most pain duration is 1-3 days.

To test the normality of the data, we used the one-sample Kolmogorov-Smirnov test.

Table 2: The normality test of Kolmogorov Smirnov

No	Variable	p-value	Interpretation
1	Level of Pain	0.378	Normal
2	Impact of Activity	0.488	normal

The normality test in Table 2, $p > 0.05$, indicates that the data were normally distributed. The test

for the relationship between the level of pain and impacted activity was chi-square *test*.

Table 3: The Chi Square test for level of pain and dysmenorrhea's impact

Level of Pain	Impact of Activity		Total	P-value
	Impacted	Not impacted		
Mild	130	36	166	0.001
Moderate- severe	172	47	219	
Total	302	77	385	

In Table 3, the obtained P-value < 0.05 means that there was a significant relationship between the level of pain and affected activity.

This study was conducted at Surakarta residency, with the largest age of respondents in the age range of 15-24 years, as many as 385 people. Primary dysmenorrhea generally was complained about by young women 20-24 years old [11]. According to the literature [23], dysmenorrhea generally occurs at the age of 15-30 years and often occurs at the age of 15-25 years. At this age, there is a process of optimizing the uterine nerve function, which has an impact on increasing the secretion of prostaglandins, causing pain during menstruation, called dysmenorrhea. Judging from the level of pain when it was the heaviest and the lightest, mostly there was moderate pain for the heaviest pain and mild pain for the lightest pain. In a study conducted by in Jakarta [23], the prevalence of dysmenorrhea was 87.5%, with mild pain at 20.48%, moderate pain at 64.76%, and severe pain at 14.76%. In another study [32], 10-20% of the respondents describe their suffering as severe and troublesome.

The body mass index of the respondent was normally supported by a study conducted previously [33], where the frequency and

severity of dysmenorrhea were higher in the normal-weight group than those of other subjects. The results of the study conducted in Makassar where most respondents had a normal BMI are in agreement with previous studies [25,34,35].

As for the impacted activity of dysmenorrhea, most of the respondents were impacted by an activity. This is in accordance with a study [36]. Activities affected by dysmenorrhea included class concentration (53.4%), homework (48.6%), school attendance (33.9%), socialization (24.3%). The most common associated symptoms were fatigue (55.9%), mood change (37.4%), dizziness (35.5%), and loss of appetite (34.8%). Dysmenorrhea has various effects on young women. In a study [27], approximately 63% of young women had withdrawn dysmenorrhea in Ethiopia. Skipping meals was significantly associated with dysmenorrhea, thus increasing the prevalence of dysmenorrhea by 2.0 times [37].

Dysmenorrhea can affect concentration in class, sports activities, class participation, socialization, homework, test-taking skills, and test scores decline [24]. Nurses who had moderate to severe dysmenorrhea reported that the pain had an impact on daily activities, such as limited exercise

(93%), limited social activity (66%), decreased concentration (81%), and absence from work (16.5%). A study on QoL showed that the short-form-36 mean total score (SF-36) found that the dysmenorrhea group was moderate, while the severe dysmenorrhea group had 69.9, which was significantly lower than the mild dysmenorrhea group and the non-dysmenorrhea group (75.2) [38]. Another study at the University of Ethiopia reported that 88.3% of young women with primary dysmenorrhea experienced some effects on academic performance, such as absence from school (80%), loss of class concentration (66.8%), loss of class participation (47.4%), limited sports participation (37.8%), limited social activities with friends (31.7%), and the inability to do homework (21%) [39]. In Indonesia, the impact of primary dysmenorrhea was absence from school [23,29,40]. It disturbed activities [30], for example, outdoor activities, household chores, concentration, schoolwork, and sports [23], and loss of productivity [30].

The most menarche ages are 12-14 years old. Dysmenorrhea generally occurs two years after the ideal menarche, i.e. 12-15 years. Most dysmenorrhea occurs at the age of 17-18 years. At that age, secondary sex development occurs, and the body's hormones are unstable so that they can stimulate the hormone prostaglandin, which causes increased uterine contractions and dysmenorrhea. According to a study [41], the average age of menarche is 12.45 ± 1.36 .

The menstrual cycle is mostly normal with a range between 21 - 35 days, and this is because primary dysmenorrhea is not accompanied by pathological symptoms in the pelvis. According to a study [41], the average menstrual cycle is 28.97 ± 4.4 days. Meanwhile, the most pain duration is 1-3 days. This is in line with a previous study [33], which reported that the duration of pain in dysmenorrhea ranges from 1-3 days. Also, it has been reported that the duration of cramp in primary dysmenorrhea ranges from 48 - 72 hours after the onset of menstruation [11].

Testing the relationship between the level of pain and impacted activity showed a significant

relationship between these two variables. This is indicated by a P-value <0.05 . This study is in line with the study conducted previously [42], where respondents experienced disruption in activity both at school and at work and social activities. Menstrual pain can only affect the lower abdomen, or it may be felt in the back or legs. Women who experience more severe menstruation often experience more pain [19]. Pain in primary dysmenorrhea occurs before or during the first onset of menstruation. The duration varies from 2-3 hours to 1 day, and with a frequency of between two and three days. Sometimes, pain starts between two and three days before menstruation, but this is a type of hypogastrium that rarely occurs, radiating to the lumbar region and both thighs. The intensity gradient continues with the associated syndrome [43]. Other symptoms that appear are back pain, headache, diarrhea, fatigue, nausea, or vomiting. The signs and symptoms of dysmenorrhea sometimes affect gastrointestinal, psychological, and eliminative functions. On the day before menstruation, abdominal gas distension is associated with dysmenorrhea, whereas all six symptoms are associated with pain intensity during dysmenorrhea. On the first day of menstruation, unless appetite increases, all other symptoms are associated with pain intensity. On the day after the cessation of menstruation, the occurrence of dysmenorrhea and pain intensity is associated with anorexia and vomiting alone [44]. Psychological symptoms can also occur, such as depression, excitability, irritability, inability to concentrate on work, and nervousness [45]. All psychological symptoms are closely related to the occurrence of dysmenorrhea and pain intensity, both on the day before and after cessation of menstruation. On the day after cessation of menstruation, irritability symptoms were found to be associated with the onset of dysmenorrhea, whereas depression and inability to concentrate on work were found to be associated with pain intensity. More young women with dysmenorrhea experience constipation, urinate frequency, and sweat a lot on the day before

menstruation, while they experience diarrhea, urinary frequency, and sweating profusely on the first day of menstruation [45]. These symptoms will disappear with the end of menstruation, while the symptoms associated with pain intensity will decrease on the day before and on the first day of menstruation. These findings suggest that symptoms that appear right before or during menstruation will disappear with the cessation of menstruation [44]. Lethargy or fatigue is a common problem in young women with dysmenorrhea. These are the three most common symptoms associated with dysmenorrhea, namely mood swings (55.3%), diarrhea (47.6%), and fatigue (45.7%) [38]. Lethargy is also associated with the intensity of pain on the third day of menstruation. All physical symptoms, except for increased sleep, were associated with dysmenorrhea. Pain intensity on the second day, namely the day before and on the first day of menstruation, was associated with symptoms of pain and swelling in the ankle and knee joints as well as facial swelling on the day after the end of menstruation. Flatulence and breast tenderness, a feeling of heaviness in the lower abdomen, and headaches on the day after the end of menstruation are also associated with dysmenorrhea [45].

Conclusion

Based on the results on the relationship between the level of pain and impact activity, it was found that there was a statistically significant relationship between the level of pain and impacted dysmenorrhea in relation to young women in the Surakarta residency.

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Conflict of Interest

We have no conflicts of interest to disclose.

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