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The Relationship Between Dysmenorrhoea and Student Learning Activities at High School 3 Palembang

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ABSTRACT

Dysmenorrhea is a menstrual disorder often faced by adolescent girls. In some people with dysmenorrhoea, perceived pain can interfere with daily physical activity giving the impact on quality of life and productivity of students in the school. This study aims to determine the relationship between dysmenorrhea and learning activities at SMA Negeri 3 Palembang. This study was an analytic observational study with cross sectional design conducted in November-Desember 2015. The population in this study were all students of SMA Negeri 3 Palembang. The samples were obtained by total sampling with total sample of 631 female student. Data were obtained through a questionnaire given to respondents. The results were analyzed by using Fisher's Exact Test. From this study, the prevalence of students who suffer from dysmenorrhea was 91.3%. Number of respondent with dysmenorrhea and disturbed study activity was 56.4%. Results of bivariat analysis showed a highly significant relationship between dysmenorrhea and study activity (p=0.000).

1. Introduction

Investigations in various developing countries show that women are concerned about menstrual disorders, but little attention is given to understanding their complaints. Data available from developing countries regarding the frequency of menstrual disorders and their impact on women's health, quality of life and social life show that evaluation and treatment of menstrual disorders should be given a higher priority in the primary care program.[1]

One of the problems faced by adolescent girls is menstrual disorders such as dysmenorrhoea.2 According to The American College of Obstetricians, dysmenorrhoea is a painful sensation associated with menstruation. Dysmenorrhoea is the most commonly reported menstrual disorder. Pain that occurs during menstruation takes place cyclically before or during menstruation.[3]

The prevalence of dysmenorrhea is basically difficult to determine due to differences in definition and conditions. The estimated prevalence varies from 45% -95%.[4,5] Shame to the doctor and tendency to underestimate the disease often makes the data of disease sufferers in Indonesia cannot be absolutely

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certain. It is said that 90% of women in Indonesia have experienced dysmenorrhea.[6]

A systematic review was carried out by the World Health Organization (WHO) regarding the prevalence of chronic pelvic pain including dysmenorrhoea involving 106 cross-sectional studies of 124,259 non-pregnant women with or without endometriosis from 1980 onwards. The prevalence of dysmenorrhea obtained varies from 8.8% of female inpatients aged 19-42 years to 94% of girls aged 10-20 years. This data shows that the majority of dysmenorrhoea is suffered by adolescent girls.[7] The adolescent limit used by researchers refers to the World Health Organization (WHO) criteria, which is between 10 and 19 years.

In some people with dysmenorrhoea, perceived pain can interfere with daily physical activity so as to have a major impact on quality of life, work productivity, and health care.[7] This complaint can make the patient absent at work.[8] In addition, complaints arising from this dysmenorrhoea can disrupt student learning activities at school. The degree and duration of dysmenorrhoea have a significant relationship (P <0.0001) to the learning activities of students in school. This is evidenced by as many as 50% of senior high school students aged 13-18 years studied in Turkey complained of not being able to concentrate on taking lessons due to dysmenorrhoea.[9]

Based on the description above, it is known that dysmenorrhoea can affect quality of life. The high incidence and lack of patient attention to the symptoms caused dysmenorrhoea as a health problem that needs attention. Therefore, researchers are interested in examining the relationship between dysmenorrhoea with learning activities in adolescent girls.

2. Methods

This study is an analytical study with cross sectional design to determine the relationship of dysmenorrhoea and learning activities in high school students of Palembang 3 High School.

The target population in this study is all high school students in Palembang. Affordable population in this study were all students of SMA Negeri 3 Palembang from November to December 2015, amounting to 709 students.

Sampling was done in total sampling. In this study there were 631 students who were willing to fill out questionnaires and were interviewed by researchers after giving informed consent in advance. The inclusion criteria in this study were high school 3 Palembang students who were willing to participate in filling out questionnaires from researchers.

Exclusion criteria in this study were high school 3 Palembang students who had never menstruated and who did not complete the questionnaire completely.

Data obtained from the sample will be processed and analyzed manually or using SPSS 22.0 for Windows 7. In this study, researchers collected data in the form of: respondent's age, age at first menstruation, intensity of menstrual pain, effect of pain on learning activities, duration of menstrual pain , location of menstrual pain, and accompanying symptoms.

This study uses the operational definition of dysmenorrhoea as pain such as muscle spasms that arise in the lower abdominal area and its surroundings before / during / after menstruation for the last 3 months that can limit daily activities with the measuring instrument used is the numerical pain scale (Numerical Rating Score[10] Measurement of learning activities carried out through interviews and categorized.[9] Research variables other than the above are measured by means of the respondent's self assessment (self assessment).

3. Results

In this study, we examined the frequency distribution

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of age, age at first menstruation, characteristics of dysmenorrhoea, and the effect of dysmenorrhoea on the learning activities of students of SMA Negeri 3 Palembang. The results of the frequency distribution can be seen in Table 1-9.

After data collection, the data were analyzed bivariately. The bivariate analysis results obtained are listed in Table 10-12.

Table 1. Frequency distribution by age.

Age (Years)	Amount (Person)	Percentage (%)
	2	0,3
	57	9,0
13	199	31,5
14	199	31,5
15	172	27,3
16	2	0,3
17		
18		
Total	631	100

Table 2. Frequency distribution of dysmenorrhoea.

Event	Number (Person)	Percentage (%)
Dismenorea	576	91,3
Not Dismenorea	55	8,7
Total	631	100

Table 3. Frequency distribution based on age for female students with dysmenorrhoea.

Age (Years)	Amount (Person)	Percentage (%)
	2	0,3
	53	9,2
13	181	31,4
14	181	31,4
15	157	27,3
16	2	0,3
17		
18		
Total	576	100

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Table 4. Frequency distribution based on age at first menstruation for students who have dysmenorrhea

Age (Years)	Amount (Person)	Percentage (%)
	2	0,3
	12	2,0
9	99	17,2
10	229	39,8
11	159	27,6
12	62	10,8
13	13	2,2
14		
15		
Total	576	100

Table 5. Frequency distribution of dysmenorrhoea characteristics by duration.

Dysmenorrhoea duration	Amount (Person)	Percentage (%)
< 24 hours	490	85,1
24-72 hours	77	13,4
> 72 hours	9	1,6
Total	576	100

Table 6. Frequency distribution of dysmenorrhoea characteristics by pain degree.

The degree of pain	Amount (Person)	Percentage (%)
Mild pain	265	46,0
Moderate pain	282	49,0
Severe pain	29	5,0
Total	576	100

Table 7. Frequency distribution of dysmenorrhoea characteristics by pain location.

Location Pain	Amount (Person)	Percentage (%)
Lower abdomen	447	77,6
Thigh	17	2,9
Waist	165	28,6
Groin	24	4,2
Etc	6	1,0

* Respondents can choose more than one answer.
* The percentage of pain locations based on the number of respondents experiencing dysmenorrhoea is 576 people.

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Table 8. Frequency distribution of dysmenorrhoea characteristics by accompanying symptoms.

Accompanying Symptoms	Amount (Person)	Percentage (%)
There is no	151	26,2
There is	425	73,8
Total	576	100
Types of accompanying symptoms	**Amount (Person)**	**Percentage (%)**
Headache	93	21,9
Nausea	43	10,1
Throw up	12	2,8
Diarrhea	14	3,3
Constipation	80	18,8
Sluggish	331	77,9
Etc	4	0,9

* respondents can have more than one symptom.
* the percentage of types of accompanying symptoms based on the number of respondents with accompanying symptoms is 425 people.

Table 9. Frequency distribution of learning activities suffering from dysmenorrhoea.

Learning activity	Amount (Person)	Percentage (%)
Not distrubed	220	38,2
Disturbed	356	61,8
Total	576	100
Impaired Learning Activities	**Amount (Person)**	**Percentage (%)**
Lack of concentration	296	51,4
Couldn't answer question	22	3,8
Unable to take lessons	10	1,7
Absent from school	28	4,9
Total	356	61,8

Table 10. Relationship between dysmenorrhoea duration and learning activities.

Dysmenorrhoea duration	Learning activity				Total	*p*
	Disturbed		Not Disturbed			
	n	%	n	%		
< 24 hours	298	51,7	192	33,3	490	0,164
24-72 hours	54	9,4	23	4,0	77	
> 72 hours	4	0,7	5	0,9	9	
Total	356	61,8	220	38,2	576	

* Chi-Square Test

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Table 11. Relationship between the degree of pain in dysmenorrhoea with learning activities.

The degree of pain	Learning activity				Total	*p*
	Disturbed		Not Disturbed			
	n	%	n	%		
Light	98	17,0	167	29,0	265	
Is	229	39,8	53	9,2	282	0,000
Weight	29	5,0	0	0,0	29	
Total	356	61,8	220	38,2	576	

** Kolmogorov-Smirnov Test*

Table 12. Relationship between dysmenorrhoea with learning activities.

Dysmenorrhoea	Learning activity				Total	*p*
	Disturbed		Not Disturbed			
	n	%	n	%		
Yes	356	56,4	220	34,9	576	0,000
Not	0	0,0	55	8,7	55	
Total	356	56,4	275	43,6	631	

**Fisher's Exact Test*

4. Discussion

Dysmenorrhoea is a painful sensation associated with menstruation. 11 Dysmenorrhoea is a pain that arises in the lower abdomen area during menstruation which can hamper daily work.[12]

In this study a high prevalence of dysmenorrhea was found (91.3%). Other studies also found a fairly high prevalence where 706 teenage girls with an average age of 16 + 1.4 years found a prevalence of dysmenorrhoea of 85.0%.[13] Variation in the incidence of dysmenorrhoea can be influenced by various factors such as ethnicity, socio-cultural, biological factors, and the range of definition of dysmenorrhoea.[14]

Basically more than 50% of women who have gone through puberty can experience dysmenorrhoea. For primary dysmenorrhoea, the prevalence can reach 88%.[15] However, this type of dysmenorrhea cannot be enforced because physical examination and support such as ultrasound and laparoscopy are required.[16]

The age of most dysmenorrhea sufferers in this study were 15 and 16 years, but other studies with similar age ranges found that the highest age of dysmenorrhea sufferers were aged 16 and 19 years.[17] Incidence of dysmenorrhoea such as primary dysmenorrhoea increases in middle and advanced adolescence.[18] Pain that is felt in primary dysmenorrhoea becomes lighter with age, especially after the age of 20 years even though other sources say that dysmenorrhoea can still peak at the age of 20-24 years.[19,20]

In this study the most menarche age was at the age of 12 and 13 years. These results are not too far from the Basic Health Research (Riskesdas) in 2010 which showed that the majority of the first menstrual age in South Sumatra was 13-14 years. Menarche can be said to be early if it occurs at the age of 9-10 years.[21] There is a tendency for someone to experience more severe dysmenorrhoea if menstruation occurred earlier.[22] In people who experience early menarche, the reproductive organs have not developed to the fullest and there is still a narrowing of the cervix, causing pain during menstruation.[23]

In addition, people who experience early menarche have a longer exposure to prostaglandins

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so that they are more at risk of experiencing dysmenorrhoea.[24]

In primary dysmenorrhoea the pain rarely lasts more than 48-72 hours. Usually the pain only lasts no more than 24 hours.[15] In the results of this study, the duration of dysmenorrhoea less than 24 hours is the duration of dysmenorrhoea most experienced by respondents but it cannot be concluded that it is primary dysmenorrhoea because further examination is needed. The data in the table above shows that the most moderate degree of pain experienced by dysmenorrhea sufferers is 282 out of 576 dysmenorrhoea sufferers (49.0%). This is in line with similar studies25 in Pemalang Aliyah Madrasah where of the 55 students studied, there were 34 students with dysmenorrhoea (62.0%) but not with other studies.[13] Which shows that the majority of respondents (42%) experienced severe pain. The pain intensity of each individual is different depending on the description, perception, and experience of pain. In dysmenorrhoea, prostaglandin release occurs which can make the pain fibers around the pelvis become hypersensitive coupled with the ischemic state of the uterus which acts as a cause of pain.[15]

Pain in dysmenorrhoea is usually localized in the suprapubic or lower abdomen. This pain can spread to the back and inner thighs.[16] In this study, the lower abdominal area was the area of most pain experienced by respondents as well as other studies.[9] The spread of pain certainly involves the nervous system. This innervation system has been developing since the embryo, creating a variety of patterns such as dermatomes, myotomes, sclerotomes, and viserotomes. Based on the pathophysiology of dysmenorrhoea, which originates from the uterus, pain can radiate according to the viserotom pattern in the uterus, namely the abdomen-rectus abdominis left and right.[26,27]

In this study there were respondents who also experienced pain in the legs and the entire stomach. In addition to the abdomen, in patients with dysmenorrhoea the pain can also spread to the back of the legs and lower back.[28] In the above data, lethargy is the most common accompanying symptom experienced by respondents. [29] Other studies found that the accompanying symptoms of dysmenorrhoea were mostly weakness and headaches. In dysmenorrhea, complaints of nausea, vomiting, headache, or diarrhea are suspected due to the presence of prostaglandins that enter the systemic circulation.[30] In addition, in dysmenorrhea there is excessive stimulation by the sympathetic nerves which can cause contractions and vasoconstriction resulting in pain which is then transmitted to the brain. As a result, symptoms occur such as dizziness, fatigue, goosebumps, excessive sweating, loss of consciousness, and fainting.[31]

In the table above, disruption of learning activities in the form of reduced concentration is the most common disorder experienced by people with dysmenorrhoea. Other studies have also found something similar.[9] People with high pain intensity will show a decrease in performance in tasks that require concentration compared to those with low pain intensity. When feeling pain, there is a mechanism that involves somatic awareness. There is a fact that explains that each person has a different level of somatic awareness. With the characteristics of the same degree of pain, a person who has a higher level of somatic awareness will experience a much greater concentration / attention disorder which will have an impact on learning activities (excessive attention to somatic sensations). The mechanism for this is twofold: easier access from pain to somatic awareness and amplification of pain sensations.[32]

In this study there is a very significant relationship between dysmenorrhoea and learning activities (p = 0,000). Other studies also showed a very significant relationship (p = 0,000).[33] There are two factors that influence the learning process of a

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person, namely internal and external factors. One internal factor is physical factors consisting of health and physical disability.[34]

In patients with dysmenorrhoea, the body can feel weak and the learning process becomes disrupted because the concentration is divided between pain, weakness, and learning activities, causing learning disorders. In this study found no significant relationship between the duration of dysmenorrhoea and learning activities but there is a very significant relationship (p = 0,000) if learning activities are associated with the degree of pain. Based on the pathophysiology of dysmenorrhoea, pain arising from the uterus is hyperactivity, ischemic, and nociceptor hypersensitivity. This pain edge is a type of visceral pain which is supplied largely by fiber C. This type of pain comes from smooth muscle that is distended or contracted, ischemic, nexrotic, and others. Prostaglandin imbalance plays an important role in the degree of pain. The higher the prostaglandin is released, the worse is the hypocensitization of the nociceptors around the pelvic innervation, so that the pain can be severe and interfere with daily activities such as learning activities.[15,35]

In addition to the nature of pain, somatic awareness also plays a role in learning disorders. A person with high somatic awareness tends to be more prone to concentration problems without regard to the degree of pain.[32] Even though there is no meaningful relationship, the majority of dysmenorrhoea data experienced by these respondents are <24 hours. This is because in dysmenorrhea pain reaches its peak on the first or second day of menstruation, more precisely the first 24-36 hours in line with the peak levels of prostaglandins released into menstrual fluid.[15]

5. Conclusion

In this study, the prevalence of dysmenorrhoea was 91.3% of the total respondents of 631 people. Of the 576 respondents who experienced dysmenorrhoea, the majority of the duration experienced by respondents was less than 24 hours (85.0%); the majority of dysmenorrhea sufferers experience moderate degree of pain (49.0%); The location of the most pain in the lower abdomen (77.6%); and the most accompanying symptoms experienced were lethargy (77.9%).

Most respondents reported reduced concentration while studying as many as 296 people (51.4%) of 576 patients with dysmenorrhoea. There is a significant relationship between dysmenorrhoea with learning activities (p = 0,000).

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