

## Research article

# The Relationship Between Menstrual Cycle Length and Lifestyle With Dysmenorrhea Among Adolescents in Indonesia: A Cross-sectional Study

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**Abstract.**

Many adolescents experience dysmenorrhea from mild or moderate to severe pain. Various factors affect the level of dysmenorrhea including age, nutritional status, age of menarche start, pain of menarche, menstrual cycle, duration of menstruation, body condition before menstruation, dysmenorrhea frequency, duration of dysmenorrhea, and disruption of activity. However, many adolescents have little knowledge about dysmenorrhea, especially about how to deal with it. This research aimed to determine the relationship between menstrual cycle length and lifestyle with dysmenorrhea among adolescents in Indonesia. This research was conducted using a cross-sectional approach. The sample was 53 adolescents selected using simple random sampling. Data were collected using a questionnaire, while the data were analyzed using the Chi-square test. The instrument was tested for validity and reliability using a questionnaire instrument. The analysis used univariate and bivariate analysis. The results showed that the variables associated with dysmenorrhea were menarche ( $p < 0.001$ ), menstrual cycle length ( $p < 0.001$ ), and lifestyle ( $p = 0.001$ ). Therefore, there was a relationship between menarche, lifestyle and menstrual cycle length with dysmenorrhea. Based on these results, it is important for relevant agencies and schools to improve information and communication about reproductive health, especially dysmenorrhea, for adolescents.

**Keywords:** dysmenorrhea, lifestyle, menstrual length, menarcheCorresponding Author: Ajeng  
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Knowledge E

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Selection and Peer-review under  
the responsibility of the ISGH4  
Conference Committee.

## 1. Introduction

The World Health Organization explains that adolescents are residents aged around 10-19 years. About 1 in 6 humans in the world is a teenager. In the world, the number of adolescents reaches 1 billion of which 85 are in developing countries [1]. Menarche is one of the signs of puberty in adolescent girls and then continues with menstruation [2]. Menstruation is regular bleeding from the uterus as a sign that the uterine organs have matured [3]. In adolescence, menarche is a natural event that occurs in girls due to emotional changes that cause physical and psychological conditions changes and

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eventually can experience several disorders such as changes in thoughts and behavior [4].

Problems during menstruation include pain in the lower part of the body, irregular menstruation, back pain, and dysmenorrhea.[5] Dysmenorrhea often occurs in adolescence. Adolescents often experience dysmenorrhea due to several risk factors. Frequent consumption of fast food can certainly affect the occurrence of dysmenorrhea [6]. These complaints will interfere with young women in carrying out their daily activities so that they have a negative impact on work activities and productivity. In Indonesia reaching 60-70% of women experiencing dysmenorrhea, 54.87% are primary dysmenorrhea, and 45.11% are secondary dysmenorrhea [7].

Data from WHO explains that the incidence of dysmenorrhea is very large. More than 50% of women in every country experience menstrual pain. In America, the percentage was 60%, while in Sweden is around 72% [6].

A study conducted by Dilek Putor et al (2013) explained that the prevalence of dysmenorrhea was 85.7% with dysmenorrhea, 30.4% described menstrual pain as severe, 49.8% as moderate, and 19.8% as mild. Most of the participants took analgesics when they experienced moderate or severe pain, and participants who experienced severe pain took analgesics from the start of menstruation [8].

Sophia, et al. (2013) explained that at Vocational Senior High School 10 in Medan there was a relationship between age of menarche and duration of menstruation with the incidence of primary dysmenorrhea ( $p=0.03/0.046$ ). Around 83.7% of dysmenorrhea was commonly experience at the age of menarche 12 years, and about 87.2% of menstrual length is 7 days [9]. Research conducted by Shinta, et. al. at Vocational Senior High School 10 in Medan, showed no relationship between age of menarche and the incidence of primary dysmenorrhea ( $p=0.116$ ) [10].

The purpose of this study was to analyze the relationship between length of menstruation and lifestyle with dysmenorrhea among adolescents in Cianjur Regency, Indonesia.

## 2. Methods

### 2.1. Study design

This study design is a survey method with a cross-sectional approach. It was occurred at Karang Tengah 2 Junior High School, Cianjur Regency on January 2020.

## 2.2. Sample

The population in this study was 114 third-grade students. Samples in this study were 53 young women and had met the inclusion and exclusion criteria. This study uses the Slovin formula to determine the sample size and the simple random sampling method for the sampling technique.

## 2.3. Instruments

The instrument in this study was based on reproductive health materials, especially dysmenorrhea. The questionnaire consists of 30 questions. The instrument was tested for validity ( $\geq 0,444$ ) and reliability ( $\geq 0,6$ )[11] using a questionnaire instrument. The variables in this study were dysmenorrhea, menarche, lifestyle, and duration of menstruation.

## 2.4. Data collection procedure

First, the researcher applied for permission to conduct the research, after that conducted socialization regarding the intent, purpose, and method of filling out the questionnaire to prospective respondents. Before the respondent filled out the questionnaire, the researcher provided an informed consent form to determine the willingness of the prospective respondent to participate in the research. Respondents were given 30 minutes to fill out the questionnaire. The technic used as primary dan secondary data. The primary data was taken by questionnaires and interviews with respondents. The secondary data was taken from the relevant institution.

## 2.5. Data analysis

Data analysis in the form of descriptive analysis. Data processing is carried out by researchers. The analysis used chi-square test and was presented on tables and narratives. Data analysis using SPSS and excel Microsoft.

## 3. Results

The most of the third-grade students of Karang Tengah 2 Junior High School, Cianjur Regency or 37 girls (69.8%) experienced dysmenorrhea. In the menarche variable, most of the 33 girls (62.3%) experienced normal menarche. For the variable length

TABLE 1: Characteristics of Respondents (N= 53).

Variables	n	%
Dysmenorrhea		
Yes	37	69,8
No	16	30,2
Menarche		
Normal	20	37,7
Abnormal	33	62,3
Menstrual Length		
3-7 days	20	37,7
<3 or >7 days	33	62,3
Lifestyle		
Negatif	18	34
Positif	35	66

of menstruation, most of the 33 girls (62.3%) had regular menstrual periods between 3-7 days, and most of the 66 girls (66%) had a positive lifestyle (Table 1).

TABLE 2: Relationship Between Menarche and Dysmenorrhea.

Variables	Dysmenorrhea		Not Dysmenorrhea		p-value
	N	%	n	%	
Menarche					
Normal	20	100	0	0	0.000
Abnormal	17	51.5	16	48.5	
Menstrual Length					
3-7 days	20	100	0	0	0.000
<3 or >7 days	17	51.5	16	48.5	
Lifestyle					
Negatif	18	100	0	0	0.001
Positif	19	54,3	16	45,7	

Bivariate analyses were conducted to determine the relationship between menarche, menstrual length, and lifestyle with dysmenorrhea at Karang Tengah 2 Junior High School, Cianjur Regency (Table 2).

The result for the variable menstrual length obtained  $p\text{-value} = 0.000 < 0.05$ , therefore it can be concluded that there is a relationship between menstrual length and the incidence of dysmenorrhea in adolescent girls at Karang Tengah 2 Junior High School, Cianjur Regency (Table 2).

The chi-square test for lifestyle variables obtained  $p\text{-value} = 0.001 < 0.05$  so that there is a relationship between lifestyle and the incidence of dysmenorrhea in adolescent girls at Karang Tengah 2 Junior High School, Cianjur Regency (Table 2).

## 4. Discussion

According to Hinchliff in Proverawati and Misaroh, menarche is the first menstrual period at puberty for a woman. The ideal age of menarche is 12 to 14 years, and under 12 years is said to be early of menarche. Many factors accelerate the process of early menarche among adolescents such as information media. Many internal and external factors can affect the complex process of the arrival of menarche.[5][2]

Menarche can occur at a younger or earlier age, caused by factors such as a family history of early menarche, nutritional status, socioeconomic status, and audio-visual stimulation. Xiaoshu (2010 in Silvana, 2012) states that menarche at a young age will lead to an earlier ovulatory cycle as well. The ovulatory cycle is a regular menstrual cycle with the length of the menstrual cycle in the range of 23-35 days with a maximum difference of 7 days between the longest and shortest menstrual cycle [12].

Primary dysmenorrhea is influenced by the age of the woman. The pain felt a few days before and during menstruation is usually due to increased secretion of the hormone prostaglandin.

The results of this study are in line with Pakaya (2013) [13] which states that there is a significant relationship between the age of menarche and the incidence of dysmenorrhea with a p-value of 0.009 and the results of research by Hasrinta and Pajeriaty (2014) [14], which was conducted at Senior High School 21 Makasar, showed that respondents who experienced age the most menarche, namely the age of menarche 12 years as much as 62.0%, with p-value = 0.029 <0.05, then there is a significant relationship between the age of menarche and the incidence of primary dysmenorrhea which is not under the initial hypothesis regarding the relationship between age at menarche and dysmenorrhea. This is due to differences in nutritional intake in adolescents. The type of food available in one city and another must also have differences that can affect the health of adolescents [5].

As stated by Proverawati and Misaroh, that the better the nutritional intake of a child, the age of menarche will also be faster and the menopause will appear to a certain extent so that it will cause pain during menstruation. A teenager who has an unhealthy lifestyle (often eating junk food, smoking, never exercising, etc.) will further trigger increased pain during menstruation. The early age of menarche increases the risk of dysmenorrhea [5] [2]

This is also explained by Sophia, et al which state that the ideal age for a woman to experience menarche is between the ages of 12-14 years. Someone who experiences

menarche 12 years has a 1.6 times greater chance of experiencing dysmenorrhea than those aged 13-14 years [9].

#### 4.1. Relationship Between Menstrual Length and Dysmenorrhea

Based on table 2, shows that there is a relationship between menstrual length and the incidence of dysmenorrheal p-value = 0.000 < 0.05

The results of this study are by the research of Sophia, et al on students of Vocational Senior High School 10 in Medan show that respondents who experienced the most dysmenorrhea were those who experienced menstrual duration > 7 days (87.2%) with a p-value = 0.046 and explained that the menstrual length > 7 days had a 1.2 times greater likelihood of experiencing dysmenorrhea than female students whose menstruation duration was 7 days [9].

Psychological and physiological factors can be the cause of the length of menstruation. Psychologically related to the emotional level of adolescent girls who are not stable when they just menstruate. While physiologically due to excessive uterine muscle contractions or very sensitivity to this hormone, the endometrium is in the secretory phase producing prostaglandin hormones. Prostaglandins are formed from unsaturated fatty acids that are synthesized by all cells in the body [15].

The longer menstruation occurs, the more often the uterus contracts, as a result, the more prostaglandins are secreted. Due to excessive prostaglandins, pain occurs during menstruation. The stress experienced by adolescents will affect the irregularity of the length of menstruation.

#### 4.2. Relationship Between Lifestyle and Dysmenorrhea

Based on table 2, shows that there is a relationship between lifestyle and the incidence of dysmenorrheal p-value = 0.001 < 0.05

There are several risk factors for primary dysmenorrhea, including family history, age < 30 years, early menarche age (< 12 years), longer menstrual cycle, nullipara, low body mass index (BMI), socioeconomic status, and low lifestyle. (diet, stress, and smoking) [16].

Research conducted by Babil et al. in 2016 the Faculty of Medicine [17], Sari Iran University, found that there were differences in the lifestyles of adolescent girls with and without primary dysmenorrhea. It was explained that a lifestyle in the form of infrequent

physical activity, stress, and smoking both as active and passive smokers were found in women with primary dysmenorrhea [17].

The first lifestyle that affects is physical activity. There is a relationship between the lack of physical activity with the incidence of primary dysmenorrhea. This is because oxygen cannot be flowed into the blood vessels of the reproductive organs at that time vasoconstriction occurs, causing women to complain of primary dysmenorrhea [17].

The second influential lifestyle is stress. Stress can interfere with the work of the endocrine system, causing irregular menstruation and pain during menstruation. It was found that high-stress levels were more influential in people with primary dysmenorrhea than those without [17].

The third is a diet in the form of eating fast food. In this era of globalization, it is very easy to get fast food [18] Conducted a study of 130 samples who consumed fast food 7 times a week and found that 83% of them experienced dysmenorrhea.

The fourth influential lifestyle is smoking, both as an active and passive smoker. Cigarette smoke contains substances that can affect the metabolism of estrogen which plays a role in regulating the menstrual process. Estrogen levels must be sufficient in the body, if the levels are insufficient, it will interfere with metabolism, causing disturbances in the reproductive organs, including dysmenorrheal [19].

## 5. Conclusion

This study concludes that there is a relationship between menarche, menstrual length, and lifestyle with the incidence of dysmenorrhea at Karang Tengah 2 Junior High School, Cianjur Regency. Suggestions based on the results of this study are: (1) Relevant agencies can increase cooperation in providing information and counseling on reproductive health for adolescents, especially for adolescent girls related to the problem of dysmenorrhea. (2) the curriculum in junior high schools can add reproductive health materials to increase students' understanding of knowledge. (3) Further researchers are advised to add other variables so that the research results can provide a lot of scientific, in-depth, and testing information.

## Acknowledgment

Thanks to all participants that part in the study and enabled this research to be possible.

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