

## **THE RELATIONSHIP BETWEEN COFFEE DRINKING HABITS AND THE INCIDENCE OF PRIMARY DYSMENOREA IN ADOLESCENT FEMALES AT STATE SENIOR HIGH SCHOOL 9 PEKANBARU**

**Deswinda<sup>1\*</sup>, Fitri Dyna<sup>1</sup>, Cindy Febriyeni<sup>1</sup>, Gita Adelia<sup>1</sup>, Yureya Nita<sup>1</sup>, Donny Hendra<sup>1</sup>**

<sup>1</sup>Department Nursing, Faculty of Nursing Science, IKes Payung Negeri, Pekanbaru, Indonesia.

**\*Corresponding author: gita.adelia@payungnegeri.ac.id**

### **Abstract**

Primary dysmenorrhea is a menstrual pain that occurs without organic abnormalities in the reproductive system, and is often experienced by young women. Coffee is one of the most familiar drinks for teenagers. Mimum coffee has become a habit when the task has piled up and the deadline is close and as media associates, especially among teenagers. Those who consume coffee on the grounds that they want to stay up because of pursuit of the advice and teenagers in everyday life do not rarely spend time with friends while drinking coffee. The purpose of this study was to determine the relationship between the habit of drinking coffee with the incidence of primary dysmenorrhea in young women at SMAN 9 Pekanbaru. The method used in the study is a quantitative method and the design of the correlation design research, with a cross sectional approach. The number of samples in this study were 40 respondents. The instrument used using a primary dysmenorrhea questionnaire sheet and drinking coffee was processed with Chi Square test. The results showed that heavy coffee drinking habits were obtained as many as 29 respondents (73.5%) and almost all respondents experienced a primary dysmenorrhea as much as 38 (95%) so that there was a relationship between the habit of drinking coffee and the events of primary dysmenorrhea in young women. The P Value is  $0.005 < 0.005$  so there is a relationship between the habit of drinking coffee with the events of primary dysmenorrhea in young women. The conclusion obtained is the relationship between the habit of drinking coffee with the incidence of primary dysmenorrhea in young women at SMAN 9 Pekanbaru.

**Keywords:** primary dysmenorrhea, teenagers, coffee habits

### **INTRODUCTION**

Adolescence is a very important time. The development of a person that occurs in adolescence is a period of transition from childhood to adulthood which includes social, psychological, and biological transformation. In addition, adolescence is also characterized by puberty, where puberty in women is characterized by menstruation, growing acne, breast growth, hair growth in the armpit area. and sexual organs, sweating easily, starting to experience vaginal discharge, increased height and weight, enlarged hips, and mood swings (Marbun & Purnamasari, 2022).

In young women, menstrual pain can cause fatigue, and interfere with social activities, especially if accompanied by symptoms such as headache, fatigue, nausea, and vomiting, diarrhea, chills, and muscle cramps. Family history of dysmenorrhea is one of the most influential factors for primary dysmenorrhea (Damayanti, 2023).

Menstruation can cause various problems in young girls, including dysmenorrhea or menstrual pain. Dysmenorrhea is a gynecological problem that often occurs in young and adult women. According to the World Health Organization (WHO), 1,769,425 people (90%) suffer from dysmenorrhea worldwide. Dysmenorrhea is the most common gynecological problem among adult, teenage and young women, if not paid attention will make daily physical activity uncomfortable (Marbun & Purnamasari, 2022). The average dysmenorrhea experienced by women is primary dysmenorrhea.

Primary dysmenorrhea is menstrual pain that is not caused by pathological conditions that occur for 8-72 hours, while secondary dysmenorrhea is menstrual pain caused by pathological conditions such as endometriosis, ovarian cysts or slanan in other reproductive organs. Secondary dysmenorrhea occurs at the age of 30 and the intensity of pain felt is more intense and longer than primary dysmenorrhea, and does not respond to the administration of NSAIDS (No-streoid anti-inflammatory drugs) (Ayunda et al., 2023).

Data released by the World Health Organization (WHO), there was an incidence of 1,769,429 people (90%) of women who experienced dysmenorrhea with varying prevalence. In Indonesia itself, the incidence of dysmenorrhea is 64.25%, there are 60% to 75% of young girls who experience primary menstrual pain, where three quarters experience mild to severe pain and the rest experience severe menstrual pain (Al Shifa et al., 2021).

In Indonesia, data from the 2018 Basic Health Research (RISK Kesehatan Dasar). Prevalence of dysmenorrhea reached 64.25% which consists of primary dysmenorrhea 54.69% and 9.36% secondary dysmenorrhea (Riskesdas, 2018). In Indonesia, the incidence of dysmenorrhea was recorded at 64.25% consisting of 54.89% experiencing primary dysmenorrhea while 9.36% experienced secondary dysmenorrhea. The incidence of dysmenorrhea in Riau Province that has been studied by (Kristina et al., 2021) in young girls (age range 15-16) in Bangko District, Rokan Hilir Regency, obtained a prevalence of dysmenorrhea of 95.7%. Research conducted by (Isnaeni et al., 2022) in Kampar Regency found that the incidence of dysmenorrhea was 97.5% from three public high schools with the largest number of students in Kampar Regency (Isnaeni et al., 2022).

The increase in primary dysmenorrhea is caused by several risk factors, including abnormal body mass index, family history of dysmenorrhea, early menarchy, duration of bleeding during menstruation, alcohol consumption, smoking, habits of eating fast food and coffee consumption (Yazia, 2019).

Coffee is one of the most famous drinks in the world and is very popular among individuals, all of them are equal. Coffee consumption in Indonesia is always increasing every year, supported by data from the Indonesian Coffee Exporters Association (AEKI) which states that coffee consumption in Indonesia increased by 36% from 2010 to 2014 (Rahmi et al., 2020). Coffee itself has a high enough caffeine content so that it can reduce fatigue, increase alertness, and fight adenosine. While caffeine which has vasoconstriction properties against blood vessels, therefore can reduce blood flow to the uterus and cause cramps. This type of drink is a betting factor for basic dysmenorrhea in young women. Apart from being a natural source of caffeine, brewed coffee contains chlorogenic acid, trigonelin, melanoidin, tannin, magnesium, and hundreds of other compounds (Wahyuni et al., 2020).

The average consumption of caffeinated beverages for a person is 165 mg/day, of which approximately 105 mg is related to coffee consumption. Health Canada has conducted a study and concluded that kefir consumption with a dose of 400mg/day has no impact on the health of adults. According to the research of Al-Matouq et al. The consumption of four cups of coffee or more per week is related to dysmenorrhea. In another study, women with high caffeine consumption (>300mg/day) are twice as likely to experience dysmenorrhea compared to women with low caffeine consumption (<300mg/day) (Yusni et al., 2019).

Larasati (2018) in his research also stated that coffee consumption is a risk factor for dysmenorrhea because the caffeine contained in coffee causes vasoconstriction thus aggravating the condition of the uterine ischemic and increasing pain.

A follow-up study that has been conducted by researchers with 10 teenage girls at SMA Negeri 9 Pekanbaru, some said that consuming coffee caused menstrual pain after a few hours, and some others said that they did not experience menstrual pain after consuming coffee.

Among them often drink instant coffee, often drink drip coffee, and often drink coffee with espresso-based ingredients.

From the description above, the researcher wants to find out the relationship between coffee consumption habits and the incidence of primary dysmenorrhea experienced by teenage girls at SMA Negeri 9 Pekanbaru.

## **RESEARCH METHODS**

The type of research used in this study is quantitative by using correlation design, by taking cross-sectional data (cutting latitude) study to learn the relationship between causal factors (free or independent variables) and consequential factors (related or dependent variables) simultaneously or for a while in a population (Handayani, 2019). This research measures the relationship between the habit of drinking coffee and the incidence of a history of primary dysmenorrhea in adolescent girls at SMAN 9 Pekanbaru City.

This research was conducted at SMA Negeri 9 Pekanbaru City, Lima Puluh District, with the reason of location selection based on recommendations from the Pekanbaru City Education Office. The research period has started from August 2024 to February 2025.

The population in this study is female students in class XII at SMA Negeri 9 Pekanbaru with a total population of 100 teenage girls who experienced primary dysmenorrhea. And data from School Health Care (UKS) nurses in one month found that 100 female students who experienced primary dysmenorrhea were admitted to UKS and were sent home because they had primary dysmenorrhea.

Sample is simply interpreted as from a population that is the actual source of data in a study (Amin et al., 2023). The calculation of the number of respondents is calculated from the total population of teenage girls with primary dysmenorrhea at SMA Negeri 9 Pekanbaru. In this study, the number of populations is known to use the binomunal proportion formula (binomunal proportions). From the total population of teenage girls with primary dysmenorrhea and coffee drinking habits in this study, there are 40 respondents.

The overall sampling in this study uses the total sampling technique. Total sampling is a sampling technique where the number of samples is equal to the population (Ahmad Suryana et al., 2021). Sample selection based on inclusion and exclusion criteria determined as follows

**Inclusion Criteria.** The criteria for this research inclusion is the general characteristic of the research subject of a population to be studied. In this study, the inclusion criteria are:

**Inclusion criteria:**

1. Teenage girls aged 15-18 years old
2. Experiencing primary dysmenorrhea and drinking coffee
3. Willing to be a respondent

**Exclusion criteria:**

1. when the research is not there. located
2. not willing to be a respondent
3. who incompletely fill out the questionnaire

## RESEARCH RESULTS

Univariate Analysis

### General Data

Univariate analysis data on respondent characteristics can be seen as follows

**Table 1. Respondent Characteristics Based on Age of Adolescents at State Senior High School 9 Pekanbaru**

No	Karakteristik Responden	Frekuensi (N)	Presentase (%)
1.	Remaja 16-18 tahun	40	100 %
	<b>Total</b>	<b>40</b>	<b>100 %</b>

Source: Primary Data Analysis, 2025

Based on the data in Table 1, it can be seen that all respondents aged teenagers 16-18 years old (100%)

### Special Data

**Table 2. Frequency Distribution Of Respondents With Coffee Drinking Habits at State Senior High School 9 Pekanbaru**

No	Karakteristik	Frekuensi (N)	Presentasse (%)
1.	Berat	29	73.5 %
2.	Sedang	8	20 %
3.	Ringan	3	7.5 %
	<b>Total</b>	<b>40</b>	<b>100 %</b>

Source: Primary Data Analysis, 2025

Based on the data in Table 2, It can be seen that almost half of the respondents have a habit of drinking heavy coffee namely 29 people (73.5%)

**Table 3. The frequency distribution of respondents based on the incidence of primary dysmenorrhea at state senior high school 9 Pekanbaru**

No	Karakteristik Responden	Frekuensi (N)	Presentase (%)
1.	ya	38	95%
2.	Tidak	2	5%
	<b>Total</b>	<b>40</b>	<b>100%</b>

Source: Primary Data Analysis, 2025

Based on the data in Table 3 can be seen that almost all respondents experience primary dysmenorrhea pain as many as 38 respondents (95%)

**Table 4. Relationship between coffee drinking habits and the incidence of primary dysmenorrhea at state senior high school 9 Pekanbaru**

Kebiasaan minum kopi	Desminore primer				Jumlah	P value
	Nyeri		Tidak nyeri			
	N	%	N	%		
Berat	29	76.3	0	0	29	100
Sedang	8	21.1	0	0	8	100
Ringan	1	2.6	2	100	3	100
<b>Total</b>	<b>28</b>	<b>100</b>	<b>2</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source: Primary Data Analysis, 2025

Based on the results of the statistical test in table 4.4, it was obtained that the habit of drinking heavy coffee with heavy coffee with as having primary dysmenorrhea as many as 29 respondents (76.3%), while the habit of drinking coffee in moderation with having primary dysmenorrhea had 8 respondents (21.1%), while the habit of drinking light coffee with having primary dysmenorrhea had 1 respondent (2.6%), while the habit of drinking heavy coffee without experiencing primary dysmenorrhea had 0 respondents (0%), while the habit of drinking moderate coffee without primary dysmenorrhea had 0 respondents (0%), while the habit of drinking light coffee without experiencing primary dysmenorrhea was 2 respondents (2.6%). Based on the results of the chi square statistical test, the P Value of  $0.000 < 0.005$  was obtained, which means that  $H_0$  was rejected, so it can be concluded that there is a relationship between the habit of drinking coffee and the history of primary dysmenorrhea in adolescent girls at SMAN 9 Pekanbaru.

## DISCUSSION

### Univariate Analysis

#### General Data

##### a. Age

Based on the results of the research on the relationship between the habit of drinking coffee and primary dysmenorrhea in adolescent girls, it was obtained that the majority of 40 respondents were aged 18-17 years old. 17 years old as many as 17 respondents (42.5%). While at the age of 18 there are 13 people (32.5%) and at the age of 16 there are 10 (25%) respondents. Most teenage women aged 15-25 years old are where primary dysmenorrhea will reach the maximum age due to excessive production of prostaglandins that stimulate hyperactivity. uterus. While in women who are less than 15 years old experiencing the age of menarche, this means that the age of menarche does not have a role for the occurrence of primary dysmenorrhea. While teenage women who are over 25 years old will have less pain (Ammar, 2021). There is another study that states that age is one of the factors that cause the occurrence of dysmenorrhea. that the older women get, the more often they experience menstruation, the wider cervix, so that in old age the occurrence of dysmenorrhea is rarely found. Primary dysmenorrhea can be found in young women who are between the ages of 15-25 years and will disappear in their late 20s or 30s without finding abnormalities in the genital system. gynecological examination. With age, menstrual pain will gradually decrease and disappear on its own (Rahayu et al., 2021). According to researchers, age is one of the risk factors for primary dysmenorrhea because of the optimization of uterine nerve function so that prostaglandin secretion increases, which eventually causes pain during

menstruation called primary dysmenorrhea. The occurrence of dysmenorrhea is easily experienced by women aged 15-25 years. Dysmenorrhea is not only caused by the hormone progesterone but can also be caused by certain abnormalities, such as endometriosis, pelvic infection, uterine tumors, appendicitis, organ failure.

b. Primary Dysmenorrhea

Based on the research, it was found that almost all respondents had a history of primary dysmenorrhea as many as 38 respondents (95%). With this result, it is known that almost all respondents experience primary dysmenorrhea pain during menstruation. According to (Indrayani et al., 2022) dysmenorrhea is pain during menstruation, usually with cramps and concentrated in the lower abdomen. Primary dysmenorrhea is the most common type of dysmenorrhea in teenage girls, dysmenorrhea usually occurs in the first two years after the first menstruation. Pain usually appears before menstruation and increases on the first to second day. Dysmenorrhea is divided into two dysmenorrhea, namely primary and secondary. Primary dysmenorrhea is a complaint of pain or tenderness in the lower abdomen either before or during menstruation without previous pathology identification, while in secondary dysmenorrhea there is an identification of previous pathology endometriosis. such as the dysmenorrhea masked in this study is primary dysmenorrhea (Salamah et al., 2023). Research conducted (Monday et al., 2020) states that individuals who consume caffeinated beverages have higher menstrual pain compared to individuals who do not consume them. Caffeine has a strong vasoconstriction effect that is involved in pelvic pain. Primary dysmenorrhea is a condition associated with increased uterine activity caused by prostaglandin production. According to the researcher's assumption, primary dysmenorrhea experienced by women is pain or pain that occurs in the lower abdomen area without other pathological conditions. This pain usually appears a few hours or even a day before menstruation or on the first day of menstruation.

c. Coffee Drinking Habits

Based on the research, it was found that most of the respondents had a habit of drinking heavy coffee as many as 29 respondents (73.5%), that consuming coffee four or more times per week was positively related to the incidence of dysmenorrhea. Caffeine is the main constituent ingredient of coffee, it plays an analog role in inhibiting the adenosine receptor, causing vasoconstriction, inhibiting blood flow to the uterus and causing pain during menstruation (Al- Matouq et al., 2020). Modern coffee is known because it has various flavor variants and usually contains various types of adaptive substances such as milk, sugar, creamer or syrup and is served in a large-volume glass. The caffeine dose limit in a day is 200 to 300 mg and if consumed in excess of that limit it can cause affective symptoms of premenstrual syndrome through the mechanism of caffeine action (Riyanti et al., 2020). Someone who consumes coffee less than once (or even per week) and non-coffee drinkers have a smaller chance of experiencing dysmenorrhea. The mechanism of coffee causing primary dysmenorrhea has not been clearly understood, one of the possible mechanisms is that caffeine that has a vasoconstriction effect will reduce blood flow to the uterus thus worsening primary dysmenorrhea (Zeru et al., 2020). There is another study that states that coffee can cause menstrual pain. The results of the study occurred because the caffeine contained in coffee can encourage the narrowing of blood vessels which results in reduced blood flow to the uterus, causing pain or primary dysmenorrhea (Zeru et al., 2020). According to the researcher's assumption, the habit of drinking coffee excessively is a risk factor for dysmenorrhea, because the caffeine contained in coffee causes vasoconstriction, thus aggravating the condition of uterine ischem and increasing pain.

### Special Data

Based on the research results, it was found that almost all respondents had the habit of drinking heavy coffee 29 with primary dysmenorrhea as many as the respondents (76.3%) while the habit of drinking light coffee with the occurrence of primary dysmenorrhea did not hurt as much as 0 respondents (0%) P value  $0,000 < 0.005$ , showing that  $H_0$  was rejected, meaning that there was a relationship between the habit of drinking coffee and the incidence of primary dysmenorrhea in young girls.

The research conducted (Monday et al., 2019) stated that individuals who consumed caffeinated drinks had higher menstrual pain compared to individuals who did not consume them. Menstrual pain or primary dysmenorrhea experienced by each woman is different, some experience primary dysmenorrhea due to hereditary factors or family history, and there are also those who experience primary dysmenorrhea due to the habit of consuming excessive sugar, early menstruation and those who experience heavy menstrual periods.

Dysmenorrhea is pain that occurs during menstruation, usually with cramps and concentrated in the lower abdomen that spreads to the lower back to the thighs. Usually this dysmenorrhea is also accompanied by nausea, vomiting, dizziness, and diarrhea. Dysmenorrhea is calcified into two types, namely primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is menstrual pain that is not related to the pathology of the absence of disease in the pelvis. Generally occurs in the first years after menarche (first menstrual dysmenorrhea). secondary is defined as menstrual pain as a result of macroscopic pelvic anatomy or pathology, as experienced by women with chronic pelvic inflammation which is often experienced by women aged 30-45 years (Saputri et al., 2022).

Coffee is a beverage that is often consumed by Indonesian people and its consumption continues to increase from year to year. This increase is also proven by the increase in coffee shop businesses in big cities. Like tea and chocolate, coffee contains xantin derivatives. Xantin derivatives include caffeine, theobromine and theophylline. Caffeine (1,3,7 - etrimethylxanthine), theophylline (1,3-dimethylxanthine) and theobromine 7-(3, dimethylxanthine) are sources of purin alkaloids among tea, chocolate, and coffee, coffee has the highest caffeine content (Ramadhini et al., 2024).

The explanation above is in line with the results of research on the relationship between stress levels, coffee drinking habits, and physical activity with the occurrence of primary dysmenorrhea in female students, most of the respondents answered that sometimes adding various toppings to modern coffee that is consumed such as boba, jelly pudding, cream cheese, and so on. In addition, the majority of respondents always choose to drink coffee with normal sugar. The addition of sugar and toppings in coffee drinks needs to be limited because if done continuously for a long period of time it can cause negative effects on the body (Harahap et al., 2023).

While research by (Kusumawati et al., 2019) said that the caffeine content in coffee drinks can increase the incidence of primary dysmenorrhea and said that the dose limit of caffeine consumption in a day is 200-300 mg per day and caffeine consumption exceeding 300 mg per day can affect the degree of individual menstrual pain.

The results of this study are in line with what was done (Al-Matouq et al., 2020) about Dysmenorrhea among high-school students And its associated factors in Kuwait states that drinking an average of 80-100 mg of caffeine in other words, 300 mg/day is equivalent to three cups of coffee per day. Research by (Monday et al., 2020) states that individuals who consume caffeinated drinks have higher menstrual pain or primary dysmenorrhea compared to individuals who do not consume them.

Based on the research results and theories above, it can be concluded that there is a relationship between the habit of drinking coffee and the incidence of primary dysmenorrhea

in teenage girls. The habit of drinking coffee with the occurrence of primary dysmenorrhea has a correlated relationship with the habit of drinking coffee more than 300mg per day can affect primary dysmenorrhea. Because coffee contains caffeine which can cause vasoconstriction so that it aggravates the ischemic condition of the uterus and increases pain and causes primary dysmenorrhea.

## CONCLUSION

Based on the research results on the Relationship Between the Habit of Drinking Coffee and the Occurrence of Primary Dysmenorrhea in Teenage Girls at SMAN 9 Pekanbaru City, the researchers took some conclusions as follows: The habit of drinking coffee in young girls of SMAN 9 Pekanbaru consists of light, medium, and heavy habits. From 40 respondents, the majority have a habit of drinking heavy coffee as much as 29 (73.5%), while those who have a history of primary dysmenorrhea are 38 respondents (95%). There is a relationship between the habit of drinking coffee and the incidence of primary dysmenorrhea in young girls at SMAN 9 Pekanbaru (Chi Square, p value = 0,000 0,005).

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