

ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN FREQUENCY AND DURATION OF CONSUMPTION OF KUNYIT ASAM WITH DYSMENORRHEA IN JUNIOR HIGH SCHOOL STUDENTS

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ABSTRACT

BACKGROUND

Puberty is intimately associated with adolescence, one of which is the first menstrual period. Young women frequently have dysmenorrhea as a result of menarche. Dysmenorrhea that isn't medicated appropriately might make it difficult for young women to go about their daily lives. Consuming *kunyit asam* is one solution to relieve the intensity of dysmenorrhea pain. This study aims to determine whether the consumption of *kunyit asam* and its regularity during menstruation can lower abdominal pain in dysmenorrhea.

METHODS

In October 2021, a cross-sectional survey was conducted at the Yayasan Indocement Middle School in Bogor, West Java. Cluster random sampling was used to collect data from 108 junior high school students who completed the Form Frequency Questionnaire (FFQ) questionnaire to determine the frequency and duration of *kunyit asam* consumption and the Numeric Rating Scale (NRS) questionnaire to reduce the severity of dysmenorrhea pain. The Chi-Square test was used to examine the data, with the level of <0.05 as the significance level.

RESULTS

Of 108 respondents, most of them experienced menarche at >11 years old (90.74%), always take *kunyit asam* solution (57.41%) with duration >3 months (74.07%) and did not have menstrual pain (88.89%). In junior high school adolescents, a significant correlation was discovered between the frequency and the duration of *kunyit asam* consumption and dysmenorrhea ($p=0.016$, $p=0.007$).

CONCLUSION

In junior high school students, there is a correlation between the frequency and duration of *kunyit asam* consumption and dysmenorrhea.

KEYWORDS

Regularity, Length, Kunyit Asam Solution, Dysmenorrhea, Teenage Girls

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ABSTRAK

Hubungan Frekuensi Dan Durasi Konsumsi Kunyit Asam Dengan Dismenore Pada Siswi SMP

LATAR BELAKANG

Masa remaja erat kaitannya dengan pubertas, salah satunya adalah siklus haid pertama. Dalam menghadapi menarche, remaja putri seringkali mengalami dismenore. Dismenore yang tidak ditangani dengan baik dapat mengganggu aktivitas sehari-hari remaja putri. Salah satu cara menurunkan derajat nyeri dismenore dengan cara mengonsumsi kunyit asam. Penelitian ini bertujuan untuk melihat apakah konsumsi kunyit asam saat menstruasi dan regularitas konsumsinya dapat mengurangi rasa nyeri pada dismenore.

METODE

Penelitian menggunakan metode *cross sectional* pada bulan Oktober 2021 di SMP Yayasan Indocement, Bogor, Jawa Barat. Teknik pengambilan data yang digunakan adalah *cluster random sampling* pada 108 siswi SMP dengan wawancara mengisi kuesioner *Form Frequency Questionnaire* (FFQ) untuk mengetahui frekuensi dan durasi konsumsi kunyit asam dan kuesioner *Numeric Rating Scale* (NRS) terhadap penurunan derajat nyeri dismenore. Data yang diperoleh kemudian di analisis menggunakan uji *Chi-Square* dengan tingkat kemaknaan <0.05 .

HASIL

Dari total 108 responden, didapatkan sebagian besar responden mengalami menarche pada usia > 11 tahun (90.74%), sebagian besar selalu mengonsumsi sediaan kunyit asam (57.41%) dengan lama konsumsi >3 bulan (74.07%) dan tidak mengalami nyeri saat menstruasi (88.89%). Didapatkan hubungan yang bermakna antara frekuensi dan lama durasi konsumsi kunyit asam dengan dismenore pada siswi SMP ($p=0.016$, $p=0.007$).

KESIMPULAN

Terdapat hubungan yang signifikan antara frekuensi dan durasi konsumsi kunyit asam dengan dismenore pada siswi SMP.

Kata kunci: Keteraturan, Durasi, Konsumsi Kunyit Asam, Dismenore, Remaja Putri.

INTRODUCTION

Dysmenorrhea (menstrual pain) is pain due to stiffness or spasms in the lower abdomen that can occur both before and during menstruation.⁽¹⁾ Complaints of pain that arise can vary; the intensity of dysmenorrhea pain is related to the amount of bleeding and duration of menstruation.⁽²⁾ Dysmenorrhea is considered severe when it interferes with daily activities. Sometimes, pain complaints accompany mood swings, nausea, vomiting, headaches, difficulty defecating, or other complaints.⁽³⁾ Higher levels of the hormone prostaglandin are a triggering factor for dysmenorrhea, stimulating uterine muscle contractions and nociceptors. Excessive uterine muscle contractions cause hypoxia and ischemia so that pain occurs. Besides that, the active nociceptors will increase the intensity of pain.⁽⁴⁾ Approximately 50% of women worldwide suffer from dysmenorrhea, with 10-20% severe dysmenorrhea so that the pain can disrupt daily activities. In Indonesia, kunyit asam is often used by young women to reduce dysmenorrhea during menstruation.⁽³⁾

Kunyit asam is a traditional medicinal herb believed by the community to relieve

dysmenorrhea. Turmeric (*Curcuma domestica* Val.), as the main ingredient contained in Kunyit asam has active ingredients such as anti-inflammatory (anti-inflammatory), antioxidant and analgesic. In addition, turmeric can inhibit the enzyme cyclooxygenase-2/COX 2 in producing excessive prostaglandin hormones. Tamarind (*Tamarindus indica*) is beneficial by inhibiting the COX 2 enzyme in treating dysmenorrhea because it contains anthocyanins.^(5,6) Turmeric contains curcumin derived from the rhizome, which can be used as anti-inflammatory, antiviral, antifungal, antibacterial and antihepatotoxic.⁽⁷⁾ Tamarind fruit flesh can also accelerate blood circulation. The flavonoid content in tamarind leaves can relieve pain, so it is widely used as an anti-inflammatory.⁽⁸⁾

According to the World Health Organization (WHO), dysmenorrhea is relatively high globally, with the highest prevalence in Finland at 94%. Research in the United States dysmenorrhea can interfere with daily activities, such as difficulty in concentrating, so it is the most frequent cause of absenteeism in adolescent girls from school. According to several studies, one by Marsaid, et al. stated that kunyit asam

could reduce and prevent menstrual pain.⁽⁹⁾ However, a study by Berkley K stated that there was no relationship between the consumption of kunyit asam and a decrease in pain intensity in dysmenorrhea. Berkley K argues that this may be due to the many risk factors and environmental factors that affect the metabolism of kunyit asam.⁽¹⁰⁾

This study aims to examine whether there is a relationship between the frequency and regularity of consumption of kunyit asam with dysmenorrhea in adolescent girls, especially in junior high school students.

METHODS

The study used a descriptive-analytic study with a cross-sectional design. The research was conducted at the Indocement Foundation Junior High School, Bogor, West Java. The time study was carried out in October 2021. The population in this study were young women at the Indocement Foundation Junior High School, totaling 170 students. Meanwhile, the sample from the study was part of the population who met the following criteria: young girls in grades 1 to 3 at the Indocement Foundation Junior High School who had experienced menstruation and were willing to participate in the study and signed informed consent. Exclusion criteria in this study were students who smoked or had a habit of consuming alcohol or analgesic drugs and students who were known to have a history of disease or reproductive disorders.

The number of samples needed is calculated using the finite-infinite formula using a p-value of 15.9%⁽¹¹⁾ and the number of N 170. The sampling technique in this study is cluster random sampling based on the class strata of junior high school students so that each class level is represented with the same number of samples. Based on the calculation results, it takes 107 respondents, but this study uses 108 respondents so that each grade level (grades 7, 8 and 9) is represented by 36 students. Data were obtained directly from respondents by using questionnaire interview techniques. This questionnaire contains questions consisting of respondent characteristics such as age at menarche. The following section is a question related to the regularity and duration of consumption of kunyit

asam using the Questionnaire Form Frequency Questionnaire (FFQ). This questionnaire asked how long the respondent had consumed kunyit asam and how the frequency of consuming kunyit asam during menstruation was. From the data obtained, the duration of consumption of kunyit asam is <3 months or >3 months, and the regularity of consumption is categorized as always if the kunyit asam are taken every day during the menstrual period or not always if the consumption of kunyit asam is not carried out every day during the menstrual period. Questionnaire related to the degree of dysmenorrhea experienced by junior high school students after consuming kunyit asam using the Numeric Rating Scale (NRS) Questionnaire, by asking respondents to choose a pain scale that was felt based on a pain scale of 0-10 (no pain - very painful). Data analysis was conducted using the SPSS (Statistical Package for the Social Sciences) application. To determine the effect of the frequency and duration of consuming kunyit asam as an independent variable on the degree of dysmenorrhea pain in junior high school students as a dependent variable, the Chi-Square test was used, carried out with a significance level of 0.05, which means that if the p-value <0.05, it means that there is a significant relationship between the independent variable and the dependent variable.

This research passed the ethical review from the Faculty of Medicine, Universitas Trisakti, on September 2021 with the ethical review number: 65/KER-FK/IX/2021.

RESULTS

Characteristic of Respondent

Based on table 1 above, the frequency distribution of respondents who experienced menarche with age 11 had the most number of respondents, namely 98 subjects (90.74%). In the habit of consuming kunyit asam, respondents with regularity every day (always) have more 62 subjects (57.41%). Compared to regularity, it is not always. For the duration, the number of respondents who had consumed kunyit asam >3 months were 80 respondents (74.07%) more than respondents who had just consumed kunyit asam <3 months. The incidence of dysmenorrhea at the Indocement Foundation Junior High School in this study, of the 108 respondents studied there

Table 1. Distribution of respondent characteristics (N=108)

Variable	Respondent	Percentage
Age of menarche		
< 11	10	9.26%
≥ 11	98	90.74%
Frequency of consuming kunyit asam		
Always	62	57.41%
Not always	46	42.59%
Duration of consuming kunyit asam		
≥ 3 months	80	74.07%
< 3 months	28	25.93%
Dysmenorrhea		
No pain	96	88.89%
Pain	12	11.11%

Table 2. The relationship between age of menarche and dysmenorrhea

Variable	Dysmenorrhea				Nilai p
	(-)		(+))		
	N	(%)	N	(%)	
Age of Menarche (year)					
<11	8	80.0%	2	20.0%	0.348*
≥11	88	89.8%	10	10.2%	

*: Chi-Square test (p-value>0,05)

were 96 (88.89%) respondents who did not have pain, this number was more than the respondents who continued to experience pain after consuming kunyit asam while menstruating.

The relationship between age of menarche and dysmenorrhea

Chi-square test analysis was used to find the relationship between age at menarche and dysmenorrhea variables. In table 2, it was found that students with menarche aged 11 years had the most results, namely no pain, by 88 respondents (89.8%). The probability value obtained is p value=0.348, so it can be concluded that there is no significant relationship between the age of menarche and dysmenorrhea.

The relationship between the frequency and duration of sour turmeric consumption with dysmenorrhea

Bivariate analysis was used to analyze the relationship between two variables: the independent variable and the dependent variable. The table above describes the results of the relationship between the two variables. Based on the results of data analysis with the Chi-square test using SPSS between the frequency of consumption of kunyit asam with the incidence of dysmenorrhea, it was found that the group who had the habit of always consuming more kunyit asam did not experience dysmenorrhea pain as many as 59 respondents (95.2%). The probability value obtained is p value = 0.016, so it can be

Table 3. The relationship between regular consumption of sour turmeric and dysmenorrhea.

Variable	Dysmenorrhea				P value
	(-)		(+)		
	N	(%)	N	(%)	
Frequency of consuming kunyit asam					
Always	59	95.2%	3	4.8%	0.016*
Not always	37	80.4%	9	19.6%	
Duration of consuming kunyit asam					
≥ 3 months	75	93.8%	5	6.2%	0.007*
< 3 months	21	75.0%	7	25.0%	

*: Chi-Square test (p-value= ≤ 0,05)

concluded that there is a significant relationship between the frequency of consuming kunyit asam and dysmenorrhea.

Likewise, the analysis found a relationship between the duration of consuming kunyit asam and dysmenorrhea. From table 3, it was found that the group that had consumed kunyit asam with a duration of >3 months was more than 75 respondents (93.8%). The probability value obtained is $p\text{ value} = 0.007$, so it can be concluded that there is a significant relationship between the duration of consuming kunyit asam and dysmenorrhea.

DISCUSSION

Based on the results of the Chi-square analysis of 108 female junior high school students of the Indocement Foundation, it was found that there was no significant relationship between the age of menarche and dysmenorrhea. This is because respondents are dominated by normal menarche age. However, age is not the only factor influencing dysmenorrhea incidence. Psychological factors and eating patterns, especially junk food, can affect dysmenorrhea.^(12,13)

The results of this study are supported by a study conducted by Suwarnisih in 2017, which showed no relationship between age of menarche and a decrease in dysmenorrhea pain in 94 respondents ($p=0.288$).⁽¹¹⁾ This is in line with research conducted by Putrie; she found data that there is no significant relationship between the age of menarche in 69 respondents with a decrease in the degree of dysmenorrhea ($p = 0.363$).⁽¹⁴⁾

Another study by Andari on 94 junior high school students stated that there was no relationship between the age of menarche and dysmenorrhea. However, Andari argues that not being physically and psychologically ready at the age of early menarche affects psychosocial adaptation in dealing with dysmenorrhea so that the onset of pain is caused by a lack of preparation related to how to reduce dysmenorrhea.⁽¹⁵⁾ Another study which states the same thing was a study conducted by Akunna GG, et al in Nigeria.⁽¹⁶⁾ Different things were found in the study by Purba et al., which stated that there was a significant relationship between the age of menarche and dysmenorrhea in vocational school students. This is because there is a good knowledge factor related

to reducing dysmenorrhea pharmacologically and non-pharmacologically.⁽¹⁷⁾

In the results of research on the relationship between the frequency of consumption of kunyit asam with dysmenorrhea, research that has been conducted at the Indocement Foundation Junior High School, Bogor, West Java, concluded that there is a significant relationship with a $p\text{-value}=0.016$ between regular consumption of kunyit asam and dysmenorrhea. This is because the content of curcumenol, curcumin and anthocyanins in tamarind inhibits the production of prostaglandins through the COX reaction pathway. Regularly consuming kunyit asam may maintain the content of turmeric and acid circulating in the body so that pain can be reduced.⁽⁹⁾

The results of this study are supported by research conducted by Marsaid, et al., who found that from 27 female students, the majority of respondents who experienced a decrease in dysmenorrhea even to no pain were respondents with the habit of always consuming kunyit asam (67.2%).⁽⁹⁾ Another study by Pichardo E, et al. in the United States also found a relationship between regular consumption of kunyit asam and dysmenorrhea. From 108 respondents, it was found that more than half of respondents who consumed kunyit asam more than once per day experienced a decrease in the degree of dysmenorrhea.⁽¹⁸⁾

Both of these studies argue that consuming kunyit asam frequently reduces dysmenorrhea pain. The better the regularity of consuming kunyit asam, the better it will be in inhibiting the secretion of prostaglandins due to the active COX reaction. As a result, inflammation can be reduced, and dysmenorrhea pain can be minimized.^(9,18) However, this is contrary to research conducted by Sartiwi, et al., which stated that from 75 respondents, there were 42 junior high school students (56%) who did not get good results in treating dysmenorrhea with the consumption of kunyit asam.⁽¹⁹⁾

The results of data analysis with the Chi-square analysis test concluded that there was a significant relationship with a $p\text{-value}$ of 0.007 between the length of time-consuming kunyit asam and dysmenorrhea. This may be because the habit of consuming kunyit asam can maintain the substance contained in kunyit asam circulating in the body.⁽²⁰⁾ Exposure to this kunyit asam

content for a longer time in the body can reduce dysmenorrhea pain even if it does not feel pain.

This result is supported by research by Saputri A, which states that kunyit asam has good effectiveness in overcoming dysmenorrhea when consumed for more than three months each ongoing menstruation.⁽²⁰⁾ Other researchers also argue that the longer the duration of kunyit asam consumed, it has a good effect on minimizing dysmenorrhea. The duration needed to give a good effect is three months during menstruation.⁽⁶⁾ However, this is not in accordance with the research conducted by Berkley K, that there is no significant relationship between the consumption of kunyit asam with a decrease in dysmenorrhea pain. This may be due to the many risk factors and environmental factors that affect the metabolism of kunyit asam.⁽¹⁰⁾

Hypertonus and uterine dilation will cause dysmenorrhea.⁽²¹⁾ The content contained in kunyit asam is believed to reduce dysmenorrhea complaints. Curcumin inhibits the action of the cyclooxygenase (COX) enzyme, resulting in decreased prostaglandin production. The decrease in pro-inflammatory factors will reduce the occurrence of inflammation, thereby reducing or even inhibiting uterine contractions.^(22,23) Kunyit asam also contains anti-inflammatory flavonoids, so it can relieve pain and provide a warm and comfortable feeling.⁽⁸⁾

This study has limitations; it was conducted using the FFQ and NRS questionnaires. Respondents filled out the questionnaire based on memory only, so there was the potential for errors due to forgetting. In addition, this study also does not take into account other factors such as body mass index and eating habits that may affect the occurrence of dysmenorrhea.

CONCLUSION

From the results of this study, it can be concluded that there is a significant relationship between the regularity (frequency) of consuming kunyit asam with dysmenorrhea and there is a significant relationship between the length of time (duration) of consuming kunyit asam with dysmenorrhea. Suggestions for further research are experimental research using several compositions of kunyit asam so that it can be known exactly the composition of kunyit asam and acid needed to reduce pain during menstruation.

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AUTHORS CONTRIBUTION

SA as the main researcher, prepares proposals, collects research data, reviews and approves manuscripts. LMS reviews proposals, prepare manuscript drafts, and approve manuscripts.

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CONFLICT OF INTEREST

There is no conflict of interest between the two authors in this study.

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