THE EFFECT OF ADMINISTERING ACID TURMERIC DRINK ON MENSTRUAL PAIN LEVELS FOR TEENAGE GIRLS IN A GIRLS' DORMITORY MAN 1 SURAKARTA

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Article Info	ABSTRACT
	Menstrual pain is also called menstrual cramps. Dysmenorrhea is characterized by pain in the lower abdomen, pelvic pain, dizziness, weakness, nausea and vomiting. The impact of primary dysmenorrhea on young women in daily activities can cause decreased concentration in learning in class, reduced sports activities, absenteeism during class hours. Menstrual pain can be treated pharmacologically and non-pharmacologically, non-pharmacologically, namely using a sour turmeric drink which contains curcumine in turmeric and anthocyanins in tamarind which inhibits the cyclooxygenase (COX) response, reduces inflammation, reduces uterine contractions, and relieves menstrual pain. The aim of this research was to determine the effect of turmeric acid drinks on the level of menstrual pain in young women at the MAN 1 Surakarta Girls' Dormitory. Quasi-experimental research method with a pre test-post test design with control. The sampling technique used total sampling with a total sample of 54 teenage girls who experienced menstrual pain at the MAN 1 Surakarta Girls' Dormitory, divided into two intervention groups. Data analysis in this study used the Wilcoxon test. The research results showed that the p value was $0.000 < 0.05$, so Ha was accepted. The conclusion of this research is that sour turmeric drinks can reduce menstrual pain in adolescent girls. Treatment with sour turmeric drinks during menstrual pain can be used as an intervention used in non-pharmacological treatment. *Keywords:* Tamarind Turmeric, Menstrual Pain, Young Women

1. INTRODUCTION

The number of dysmenorrhea in the world is very large, an average of 50% of women experience primary dysmenorrhea. The prevalence of dysmenorrhea in each country is different. The prevalence in the United States is 85%, in Italy it is 84.1% and in Australia it is 80%. The average prevalence in Asia is 84.2% with a presentation of 68.7% occurring in Northeast Asia, 74.8% in Asia Middle East, and 54.0% in northwest Asia. The prevalence in Southeast Asian countries is also different, the incidence rate in Malaysia reached 69.4%, Thailand 84.2%. From the results of the PIK-KRR research in Indonesia, the prevalence rate of dysmenorrhea was 72.89% who experienced primary dysmenorrhea and 27.11% who experienced secondary dysmenorrhea.(Tsamara et al., 2020).

Data from the World Health Organization (WHO) for 2020 shows that the incidence of dysmenorrhea in adolescent girls reaches 50%. The incidence of dysmenorrhea in Central Java in 2016 reached 56%. Although dysmenorrhea is generally a natural event that occurs every month in women, it can be disturbing for women who experience it (Haryanti and Kurniawati, 2017). Research in Surakarta City in 2019 on female students found the incidence of dysmenorrhea was 53% (Andini and Hermawan, 2019).

*Dysmenorrhea*Primary occurs due to an increase in prostaglandin (PG) F2-alpha which is a cyclooxyggenase (COX-2) which causes hypertonus and vasoconstriction in the myometrium resulting in ischemia and pain in the lower abdomen. There are strong and prolonged contractions in the uterine wall, high levels of prostaglandin hormones and widening of the uterine wall during menstrual bleeding, resulting in pain during

menstruation. Young women will more often feel pain due to primary dysmenorrhea because their hormonal cycle is not yet very stable. The impact of primary dysmenorrhea on young women in daily activities can cause decreased concentration in learning in class, reduced sports activities, absence from class hours and social activities.(Winarso, 2014)

Menstrual pain can be treated pharmacologically and non-pharmacologically, pharmacologically, namely using nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen, naproxen, diclofenac, hydrocodone, acetaminophen, ketoprofen, meclofenamate sodium. To relieve the symptoms of primary dysmenorrhea include using warm compresses, taking pain relievers, exercising regularly, and consuming herbal products that are considered beneficial. Habit of drinking herbal medicine/herbal products such as tamarind turmeric. Jamu can be classified as a traditional drink because it uses natural ingredients such as nutritious plants that have been used for generations. Herbal plants are now the main alternative for young women who want to relieve dysmenorrhea pain without experiencing side effects(Winarso, 2014).

Turmeric acid drink is a drink made from turmeric and tamarind. Turmeric naturally contains active compounds that can act as analgesic, antipyretic, and anti-inflammatory effects and acid (tamarind) which contains active compounds as anti-inflammatory, antipyretic, and sedative. Turmeric is rich in essential oils which can prevent excessive stomach acid from being released and reduce excessive bowel movements. Apart from that, it was explained that turmeric drink as a pain reducer in primary dysmenorrhea has minimal side effects. The active compound or chemical contained in turmeric is curcumine. Curcumine in turmeric and anthocyanins in tamarind inhibit the cyclooxygenase (COX) response, reduce inflammation, reduce uterine contractions, and relieve menstrual pain. According to Commandeur and Vermeulen,(Winarso, 2014).

Based on the results of observations made by researchers at the MAN 1 Surakarta Dormitory on 54 young women, the results showed that the pain they experienced varied, some young women felt cramps in the lower abdomen and felt the pain spread to the waist, experienced nausea, and experienced headaches and body weakness. According to young women, the pain they feel reduces their appetite, interferes with their activities and makes it difficult to concentrate while studying. The ways to deal with menstrual pain experienced by female students at the MAN 1 Surakarta Dormitory are by adjusting position, taking anti-pain medication, doing warm compresses, lying down and resting, using fresh care and eucalyptus oil, doing massage on painful areas for young women. just left without any action because they don't know how to reduce the pain.

2. METHOD

This research is a type of quantitative research using a Quasi Experimental method. The research design used was Pretest-Posttest with control. The researcher chose this type of research because it was to determine the difference in the level of menstrual pain between the group that was treated with turmeric acid drink as the experimental group and the group that was not treated (control group).

The population in this study were young women at the MAN 1 Surakarta Girls' Dormitory. The population in this study was 54 teenage girls who experienced menstrual pain.

The instruments used in this research were general data pre-test and post-test sheets and NRS (Numeric Rating Scale) pain scale measurement sheets. The NRS (Numeric Rating Scale) pain scale measurement is a horizontal scale that shows numbers from 0-10, namely 0 indicates no pain and 10 numbers indicates severe pain.

The processing techniques used are editing, coding, scoring, entry, cleaning, and tabulating. Meanwhile, the data analysis used includes univariate analysis, homogeneity test, and bivariate analysis.

3. RESEARCH RESULT
3.1 Univariate Analysis

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics Respondent	Control Group		Experimental group		Total number	% Total	Sig
	Amount	%	Amount	%			
Age							0.029
Early teens (15 years)	4	14.8	8	29.6	17	31.4	
Early teens (16 years)	19	70.3	10	37.0	24	88.8	
Late teens (17 years)	4	14.8	9	33.3	13	48.1	
Total	27		27		54		
Menarche Age							0.583
11 years old	6	22.2	4	14.8	10	18.5	
12 years old	6	22.2	12	44.4	16	29.6	
13 years old	10	37.0	6	22.2	16	29.6	
14 years	5	18.5	5	18.5	12	22.2	
Total	27		27		54		
Class							0.601

XI 2	14	51.8	10	37.0	26	48.1
XI 3	13	48.1	15	55.5	28	51.8
Total	27		27		54	

Based on table 1 it can be seen that:

1. Respondents aged 15 years were 17 people (31.4%), respondents aged 16 years were 24 people (44.4%), and respondents aged 17 years were 13 people (24.0%). The majority of respondents who experienced menstrual pain or dysmenorrhea were respondents aged 16 years, namely 24 people (44.4%).
2. There were 10 respondents who experienced menarche or first menstruation at the age of 11 years (18.5%), 16 respondents who experienced menarche at the age of 12 years (29.6%), 16 respondents who experienced menarche at the age of 13 years. (29.6%), and 12 respondents experienced menarche at the age of 14 years (22.2%). The majority of respondents experienced menarche or first menstruation at the age of 13 and 14 years, namely 16 people (29.6%). Based on table 4.1, it can be seen that there were 26 respondents from class XI 2 (48.1%), and from class XI 3 there were 28 people (51.8%). The majority of respondents who experienced menstrual pain or dysmenorrhea in the MAN 1 Surakarta girls' dormitory were class XI 3, namely 28 people (51.8%).

Based on the homogeneity test in table 1, it shows that the characteristics of respondents' age, age at menarche, and class in the experimental group and control group obtained a p value of >0.05, which means there is no significant difference in the characteristics of respondents' age, age at menarche, and class of respondents in the experimental class. and controls are homogeneous.

3.2 Homogeneity Test

Table 2 Results of Homogeneity Test for Experimental and Control Groups

Variable	Levene Statistics	Sig.	Information
Group pre-test Experiment-Control	0.065	0.800	Homogeneous
Group post-test Experiment-Control	0.525	0.472	Homogeneous

Based on table 2, it can be said that for the homogeneity test in the pre-test for the experimental and control groups, a significant value of 0.800 was obtained, and the post-test significance value for the experimental and control groups was 0.472. From this explanation, it can be seen that the significance value is >0.05. So it can be concluded that the population has a homogeneous variant or the data comes from a population with the same variant.

3.3 Bivariate Analysis
3.3.1 Measurement of Menstrual Pain Complaint Scores for the Experimental Group and Control Group

Table 3. Measurement of Menstrual Pain Complaint Scores for the Experimental Group and Control Group

Group	Mean	Min	Max
Experiment			
Pre-test	4.52	3.00	7.00
Post test	1.30	0.00	3.00
Control			
Pre-test	4.15	1.00	6.00
Post test	1.81	0.00	4.00

Based on table 3, measuring menstrual pain complaint scores, it was found that in the experimental group the average (mean) pre-test pain score was 4.52 with a minimum score of 3.00 and a maximum score of 7.00. Meanwhile, the average score (mean) on post test pain was 1.30 with a minimum score of 0.00 and a maximum score of 3.00. In the control group the average (mean) pre-test pain score was 4.15 with a minimum score of 1.00 and a score of 6.00. Meanwhile, the average score (mean) on post test pain was 1.81 with a minimum score of 0.00 and a maximum score of 4.00.

3.3.2 Data Normality Test

The data normality test aims to determine whether the data used in the research is normally or not normally distributed. Data has a normal distribution if the data has a p value > 0.05 and if it is not normally distributed the data has a p value < 0.05 (Sugiono 2017). Before data analysis was carried out, a data normality test was carried out, researchers used the Kolmogorov-Smirnov test because the number of samples was more than 50.

Table 4. Data Normality Test

Pain Level	P Value	Information
Experimental group pre-test scale	0.032	Normal
Experimental group post test scale	0.001	Abnormal

Control group pre-test scale	0.135	Normal
Control group post test scale	0.001	Abnormal

Based on table 4, it shows that the results of the Kolmogorov-Smirnov normality test before and after being given (sour turmeric drink) show that the p value on the pre test scale for the experimental group is 0.032 and the p value on the post test scale for the experimental group is 0.001 so that the p value <0.05 means the data is not distributed. normal. The results of the normality test of the data before and after being given treatment (soy milk) showed that the p value on the pre-test scale for the control group was 0.135 and the p-value on the post-test scale for the control group was 0.001, so it was <0.05, meaning the data was not normally distributed. From the results of the normality test, the data was stated to be not normally distributed, so the data analysis test used the Wilcoxon test.

3.3.3 Differences in Menstrual Pain Complaint Scores in the Experimental Group and the Control Group

Table 5. Wilcoxon Test Analysis Results for Experimental and Control Groups

Group	Sig.
*Pre-post test*Experimental group	0,000
*Pre-post test*Control group	0,000

Based on table 5, the results of the Wilcoxon test analysis before and after being given the tamarind turmeric drink treatment showed that the result was p value = 0.000 with a significant p value <0.05 which shows that there was a decrease in menstrual pain (dysmenorrhea) experienced by young women at the MAN 1 Surakarta Girls' Dormitory. after being given a sour turmeric drink. Meanwhile, the results of the Wilcoxon test analysis before and after being given soy milk treatment showed that p value = 0.000 with a significant p value <0.05 which shows that there is also an effect of giving soy milk on reducing menstrual pain (dysmenorrhea) experienced by young women in the Girls' Dormitory. MAN 1 Surakarta after being given soy milk.

3.3.4 Test of differences/comparison between treatments given to the experimental group (turmeric and tamarind drinks) and the control group (soy milk)

Table 6. Differences from the Independent t-test on giving Turmeric Tamarind Drink (Experiment) and Soy Milk (Control)

Variable	Normality		Homogeneous		Test the Difference	
	Sig	Note	Sig	Note	Sig	Note
Cell. Pree-post Ex Experiment	0.012	Normal	0.752	Homogeneous	0.752	There's no difference
Cell. Pree-post Control Ex	0.041	Normal				

From table 6 above, the results of the normality test for the experimental group show a p value of 0.012, which means >0.005, so the distribution is normal. And the results of the control group showed a p value of 0.041, which means >0.005, so the distribution is normal. The results of the homogeneity test obtained a significance value, namely p value 0.752, which means >0.005, so the two groups have a homogeneous distribution. Then a difference test was carried out between the two groups using the Independent t-test, which resulted in a significant p value of 0.752, which means <0.005, so there is a significant difference between the two groups.

4. DISCUSSION
4.1 Univariate Analysis
4.1.1 Age and Class

The results of the frequency distribution based on age showed that all respondents experienced menstrual pain. On average, menstrual pain is experienced by teenage girls aged 16 years with a percentage of 88.8%. The incidence of menstrual pain is greatly influenced by a woman's age, 16 years old is the age of middle adolescence (age range 15-17 years) where during this period teenagers experience changes in themselves. One of them is menstruation. Menstruation is the occurrence of bleeding in the uterus that flows from the uterus and comes out through the vagina(Wulandari et al., 2015)

The results of this research are strengthened by the opinion or theory of (Bobak, Lowdermilk, 2012), that the age range for teenagers is from 15 years to 16 years. Most are aged 16 years. Adolescence is a transitional period when individuals move from the child phase to the adult phase. At this age, there is also often an optimization of the function of the uterine nerves which increases the secretion of prostaglandins, causing pain during menstruation or what is usually called dysmenorrhoea.(Astuti, Y., & Anggarawati, 2020)

The results of the distribution based on class showed that the average female teenager who experienced menstrual pain was in class IX III Madrasah Alyah Negri (MAN) with a percentage of 51.8%, the average class IX was 15-16 years old which is the age of middle adolescence. (age range 15-17 years) because during this period

teenagers experience biological development, namely experiencing menstruation which is the occurrence of uterine bleeding that flows from the uterus and exits through the vagina.

4.1.2   Menarche Age

The results of the frequency distribution based on age of menache showed that the average female adolescent who experienced menarche or first menstruation was at the age of 12-13 years with a percentage of 29.6%. Menarche is a girl's first menstruation. Menarche normally occurs at the age of 12-13 years. The age at which menarche occurs is influenced by many factors, including nutritional, ethnic, genetic, social, economic, and others. Nutritional factors influence sexual maturity. In adolescents who have menarche early, they tend to be heavier and taller at menarche compared to those who have not menstruated at the same age. Generally, teenagers who experience sexual maturity earlier will have a higher body mass index(Syam et al., 2022)

This is also supported by previous research put forward by(Nur Fitri Jayanti, 2012)that the vulnerable age for menarche is 11-13 years with the majority of cases of dysmenorrhea in the frequent category being 10 respondents. Similar research was also carried out by(Mulyani et al., 2022), with research results showing that there is a relationship between the age of menarche and dysmenorrhea in young women with a P value of 0.016 and the incidence of dysmenorrhea with a P value of 0.024, where the p value is smaller than 0.05, this shows that there is a significant relationship between age of menarche with the incidence of primary dysmenorrhea.

4.2 Bivariate Analysis
4.2.1   Menstrual Pain Score Before and After Intervention

The research results showed that the average menstrual pain score in the experimental group before the intervention was carried out was 4.52 with the lowest menstrual pain score being 3.00 and the highest menstrual pain score being 7.00. In the control group the average menstrual pain score before the intervention was 4.15 with the lowest menstrual pain score being 1.00 and the highest menstrual pain score being 6.00. Meanwhile, the average menstrual pain score in the experimental group after the intervention (turmeric tamarind drink) was 1.30 with the lowest menstrual pain score being 0.00 and the highest pain score being 3.00. In the control group the average menstrual pain score after the intervention (soy milk) was 1.81 with the lowest menstrual pain score being 0.00 and the highest menstrual pain score being 4.00.

After being given a sour turmeric drink, it showed a decrease in the average menstrual pain score in adolescent girls. The average score for menstrual pain before being given the turmeric acid drink was 4.52 and decreased to 1.30 after the young women consumed the turmeric acid drink. The decrease in the average value of the intensity of menstrual pain in respondents before and after was 3. From these results, researchers can conclude that giving tamarind turmeric drinks has an effect on reducing menstrual pain in young women. This decrease in menstrual pain is due to the presence of ingredients containing curcumine and anthocyanins which reduces menstrual pain caused by uterine contractions by blocking the production of prostaglandins that cause menstrual pain.

4.2.2   Analysis of the Effect of Giving Turmeric Tamarind Drinks on Reducing Menstrual Pain in Adolescent Girls in the MAN 1 Surakarta Girls' Dormitory

Based on the results of research data analysis, a homogeneity test was carried out, the results of which were homogeneous and a normality test was carried out, the results of which were not normal. Due to the requirements for the Paired Sample t-test, the group of data from the hormone test and normality test must be normally distributed, to determine the effect of giving the turmeric acid drink, use the Wilcoxon test and it was found that the results of the Wilcoxon test before and after being given the turmeric acid drink showed that the result was p value = 0.000 with a significant p value <0.05 which shows that there is a decrease in menstrual pain (dysmenorrhea) experienced by young women after being given turmeric acid drinks. The results of this research are in line with research conducted by(Kasim, 2017)with the title The effectiveness of sour turmeric drinks on reducing menstrual pain in female students at North Gorontalo State High School with research results showing that there is an effect of giving sour turmeric drinks on reducing menstrual pain with a p-value of 0.000 < α (0.05).

Researchers believe that giving tamarind turmeric drinks is expected to reduce menstrual pain. From the results of observations and measurements after the intervention of giving tamarind turmeric drinks, it was obtained that all respondents experienced a decrease in pain intensity after being given the intervention of giving tamarind turmeric drinks. Respondents indicate the level of pain they feel using the Numeric Rating Scale (NRS). So it can be concluded that giving tamarind turmeric drinks is a non-pharmacological pain management that can help reduce menstrual pain in young women.

4.2.3   Analysis of differences in treatment given to the experimental group (turmeric and tamarind drinks) and the control group (soy milk)

Based on the results of research data analysis, a data normality test was carried out on the results of the experimental group, namely 0.012, which means >0.005, which is normally distributed data, and for the control group, namely 0.041, which means <0.005, which is normal distributed data. The results of the homogeneity test

showed significance, namely a p value of 0.752, meaning >0.005, which means that the data for the two groups is homogeneously distributed. Then a difference test was carried out between the 2 groups using the Independent t-test, which resulted in a significant p value of 0.752, meaning >0.005, so it was concluded that there was no significant difference between the 2 groups.

The difference between the turmeric tamarind drink experimental group and the soy milk control group lies in the variables observed in the research context. The experimental group consumed turmeric acid made from turmeric and tamarind while the control group consumed soy milk. Comparisons between the experimental and control groups in this study were used to evaluate whether turmeric and soy milk had a significant influence or effect on the observed variables, such as taste, aroma, health properties, or other relevant factors. So it can be concluded that the difference between the turmeric tamarind experimental group and the soy milk control group is the type of ingredients used in making, Tamarind turmeric contains curcumine and anthocyanins which can reduce menstrual pain caused by uterine contractions by blocking the production of prostaglandins that cause menstrual pain, and soy milk contains calcium which relaxes the uterine muscles. These two treatments both have an effect or influence on the level of menstrual pain experienced by young women at the MAN 1 Surakarta Girls' Dormitory.

5. CONCLUSION

Based on the results of research and discussion regarding the effect of giving sour turmeric drinks on the level of menstrual pain in young women at the MAN 1 Surakarta Girls' Dormitory, it can be concluded as follows:

5.1 The average pain level of menstrual pain for each characteristic, namely the characteristics of respondents based on age in adolescents aged 16 years, was 24 people (88.8). The characteristics of respondents at menarche age are 12-13 years old, namely 16 people (29.6) and the characteristics of respondents in class are located at XI 3, 28 people (51.8).

5.2 The average level of menstrual pain in the experimental group before being given the intervention was 4.52 (moderate pain), while in the control group the average level of menstrual pain before being given the intervention was 4.15 (moderate pain).

5.3 The average level of menstrual pain in the experimental group after being given the intervention was 1.30 (mild pain), while in the control group the average level of menstrual pain after being given the intervention was 1.81 (mild pain).

5.4 Based on the results of the Wilcoxon test before and after being given sour turmeric drink, it was found that the p value = 0.000 with a significant value of p value <0.05 = there was a decrease, while the results of the Wilcoxon test analysis before and after being given soy milk showed that the p value = 0.000 with significant p value> 0.05 = there is also a decrease. It can be concluded that there was a decrease in the level of menstrual pain experienced by young women after being given sour turmeric drink in the experimental group and soy milk in the control group, so that the hypothesis (Ha) in this study was accepted and Hypothesis (Ho) rejected.

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