Vol. 02, No.1, February 2025, 1-10
e-ISSN: **3047-8839**

Effectiveness of Carrot Juice and Ginger Brewing on Reducing Primary Menstrual Pain (Dysmenorrhea) in Adolescent Females in RW 33, Sako Village, Palembang City

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Article Information
Received: January 06, 2025
Revised: February 11, 2025
Online: February 12, 2025

Keywords
Primary Menstrual Pain (Dysmenorrhea), Carrot Juice, Ginger Decoction, Warm Compresses

ABSTRACT

Menstrual pain can have adverse effects it can cause psychological instability. menstrual pain can have adverse effects. One of the non-pharmacological treatments to overcome menstrual pain (dysmenorrhea) is carrot juice and ginger decoction. ***Objectives and Methods****: To determine the effect of carrot juice and ginger decoction on reducing menstrual pain in adolescent girls in the RW 33 area of Sako Village, Palembang City. The research design is an experimental time series design. The population is all adolescent girls with a total sampling of 20 respondents each in the carrot juice treatment group, ginger decoction and warm compress control group. Pain was assessed using pre-test and post-test scores on the Numerical Rating Scale (NRS), statistical analysis tests using the Wilcoxon test, Kruskall wallis and binary logistic regression.* ***Results****: There was a decrease in menstrual pain pre and post non-pharmacological treatment p-value 0.00 <0.05, the group that had the most influence on reducing menstrual pain was the ginger decoction group (p-value 0.028 <0.05).* ***Conclusion****: carrot juice and ginger decoction as an alternative to reduce menstrual pain (dysmenorrhea) in adolescent girls. However, ginger decoction is more effective than carrot juice and warm compresses.*

Keyword: *Primary Menstrual Pain (Dysmenorrhea), Carrot Juice, Ginger Decoction, Warm Compresses*

http://doi.org/10.69855/mgj.v2i1.100
https://gpijournal.com/index.php/miracle
PUBLISHED BY : GPress Indonesia

INTRODUCTION

Menstruation is the process of releasing blood from the uterus due to the collapse of the inner lining of the uterus, which contains many blood vessels and unfertilized eggs. And women must also maintain hygiene to ensure their reproductive organs are clean and free from infection. The impacts of not maintaining cleanliness during menstruation include being more susceptible to urinary tract infections, reproductive tract infections, and skin irritation (Palupi et al., 2020).

Problems that occur during menstruation are gynecological problems that are often complained of by adolescent girls, including irregular menstruation and menstrual cramps. Menstrual pain usually occurs at the age of 17-24 years, caused by the optimization of uterine function

At the time of Menstruation is a big problem experienced is pain or no discomfort in the area abdomen called dysmenorrhea and often occurs at the age of Productive. In young women who having dysmenorrhea is 10-fold prostaglandin levels compared to those who do not experience Dysmenorrhea (Pratiwi IGD, Hasanah L, 2020).

Dysmenorrhea is a symptom general menstruation that dramatically can degrade the quality life and inhibiting activity daily life and work productivity. Dysmenorrhea is an important topic in Adolescent treatment due to impact the magnitude of the quality of life teenage women and young adults (Karomah, 2022).

The incidence of menstrual pain (dysmenorrhea) is still common in the world. According to the World Health Organization (WHO, 2018), the prevalence of menstrual pain (dysmenorrhea) worldwide is very high. On average, more than 50% of women in all countries experience menstrual pain (dysmenorrhea), for example in America the incidence is around 60%, Sweden around 72%, Finland reaches 94%. England shows that 10% of high school teenagers are absent for 1-3 days each month due to menstrual pain (dysmenorrhea). In Indonesia, the incidence of menstrual pain was recorded at 64.25%, consisting of 54.89% experiencing primary menstrual pain and 9.36% experiencing secondary menstrual pain (Fadila A,2015).

Menstrual pain is a condition experienced by most women around the world. Moment Menstruation occurs in every woman's body increased levels of Prostaglandin (a substance that related, among other things, to painful stimulation of human body), spasms in the uterine muscles causing it to feel very painful, esp occurs in the lower abdomen and cramps in back (Fitri & Ariesthi, 2020). Pain during menstruation or menstruation is indeed a little annoying, but also very annoying because it can affect daily life (Luh N, Dewi YJ, Runiari N, 2019).

How to reduce menstrual pain can be done in two ways namely pharmacology and non-pharmacology Pharmacology. Pharmacological namely by administering drugs analgetics for example, aspirin, Ponstan, Novalgin. Then therapy hormonal is nonsteroidal drugs Prostaglandins such as ibuprofen as well as naproxen and canal dilatation cervical. For non- Pharmacology can be done warm compress or water bath warm, massage, physical exercise, sleep adequate, hypnotherapy, distraction such as listening to music and relaxation such as yoga and breath in, as well as the provision of drinks herbs (Betty & Ayamah, 2021).

Herbal therapy can done by using traditional medicines derived from plant materials. Some Plant material is believed to be reduce pain. One.The plant is ginger and carrots. Carrots are rich in nutrients, including iron, which replaces blood lost during menstruation and contains beta-carotene which has an analgesic effect when given in certain doses. A study conducted (Sari H, Hayati E, 2020) showed that giving 250 grams of blended carrots twice a day with a 4-hour interval for 2 days can reduce menstrual pain (dysmenorrhea). Ginger plants can also be trusted for primary menstrual pain relief. This ginger drink warms the body and is antirheumatic, anti-inflammatory and analgesic. Ginger is as effective as mefenamic acid and ibuprofen in relieving menstrual pain.(Herlinadiyaningsih H, 2016).

In a study conducted by Rahayu (2019) boiled tamarind and ginger as an effort to reduce dysmenorrhea in students, for further researchers it is recommended to expand the scope of giving boiled ginger in research such as giving different doses and times of administration. According to research by Aryanta (2019) entitled "Benefits of ginger for health", ginger has anti-histamine properties which are commonly used to relieve stress and has anti-inflammatory properties so that it can reduce pain during menstruation and muscle pain.

A preliminary study conducted in RW 33, Sako Village, Palembang City found that 53.8% of female adolescents experienced primary menstrual pain. The menstrual pain experienced made female adolescents absent from school and disrupted their daily activities. Some female adolescents dealt with menstrual pain by taking painkillers and some did not know how to deal with the menstrual pain they experienced.

Based on the description above Researchers are interested in doing Research on "the effectiveness of carrot juice and boiled ginger to reduce primary menstrual pain in female adolescents in RW 33, Sako Village, Palembang City".

METHODS

This study used an experimental method with a time series design. The population in this study were female adolescents in RW 33, Sako Village, Palembang City. This study used total sampling. The research sample was 60 respondents who were divided into 3 groups, namely 20 respondents for the carrot juice group, 20 respondents for the ginger decoction group and 20 respondents for the warm compress. The instrument in this study used an observation sheet with an NRS pain scale measuring instrument.

Non-pharmacological treatment with carrot juice, ginger decoction and warm compresses was given to female adolescents who experienced primary menstrual pain (dysmenorrhea) on the first and second days of menstruation. The pain scale was measured at 30 minutes, 60 minutes, 90 minutes, and 120 minutes after the intervention was given to see the intensity of pain after the intervention was given.

The method of making carrot juice's to use 100 grams of carrots blended using 200 ml of water. The carrot juice was given to the carrot juice treatment group. Ginger decoction is made using 20 grams of thinly sliced ginger boiled with 400 ml of water. Boiled water of 200 ml was given to

respondents in the ginger decoction treatment group. While for the warm compress control group using 330 ml of warm water with a temperature of 400C in a glass bottle lined with cloth. The warm compress was given to respondents in the warm compress control group.

The data obtained are primary data, namely data obtained directly from the field through the distribution of observation sheets assisted by one enumerator. Respondents who meet the inclusion criteria are divided into 3 groups. Furthermore, a pretest and posttest are carried out. The results of the pain scale measurements are compared between the carrot juice group, the ginger decoction group and the warm compress group.

The data processing process uses computerization with several stages, namely starting from editing, coding, tabulating and data entry. Data analysis is carried out univariately, bivariately and multivariately. Univariate analysis to describe the data for each variable. Bivariate univariate analysis to determine the effect of non-pharmacological treatment on reducing primary menstrual pain in adolescent girls and to determine the effectiveness between 3 groups. The data in this study were not normally distributed, so the bivariate analysis used the Wilcoxon and Kruskall Wallis tests. While for multivariate analysis to determine the pure relationship between non-pharmacological treatment and reducing menstrual pain. The data in the study were categorical, so the multivariate analysis used the Binary Logistic Regression test.

RESULTS

This study involved 60 respondents divided into 3 groups, namely a group of female adolescents treated with non-pharmacological treatment with carrot juice as many as 20 people, female adolescents treated with non-pharmacological treatment with boiled ginger as many as 20 people and female adolescents treated with non-pharmacological treatment with warm compresses as many as 20 people. The characteristics of the respondents recorded included age of menarche (less than 12 years / equal to 12 years or more), family history (there is / no family history), exercise habits (routine or not routine), Body Mass Index (thin, ideal, fat), duration of menstruation (≤7 days or ≥7 days or more). The characteristics of the respondents in this study are shown in the following table.

Table 1 Respondents' characteristic

Characteristics	Carrot juice		Ginger decoction		Warm compress		*P value*
	N	%	N	%	N	%	
Menarche							
Early Menarche	11	55	12	60	8	40	0,822
Normal	9	45	8	40	12	60	
Family history							
Yes	8	40	10	50	12	60	0,675
No	12	60	10	50	8	40	
Exercise habits							
Regular	5	25	3	15	2	10	0,044
No	15	75	17	85	18	90	
IMT							
Thin	5	25	7	35	5	25	0,463
Ideal	10	50	8	40	12	60	
Obese	5	25	5	25	3	15	
Menstrual duration							
< 7 hari	15	75	13	65	10	50	0,041
≥ 7 hari	5	25	7	35	10	50	

Based on table 1, it is known that the majority of respondents experienced early menarche, as many as 11 respondents (55%) in the carrot juice group, 12 respondents (60%) in the ginger decoction group and 8 respondents (40%) in the warm compress group. For family history, the carrot juice group had a family history of 8 respondents (40%), the ginger decoction group had a family history of 10 respondents (50%) and the warm compress group was 12 respondents (60%). For exercise habits, the carrot juice group had regular exercise habits of 5 respondents (25%), the ginger decoction group had 3 respondents (15%) and the warm compress group had 2 respondents (10%). For BMI in the carrot juice group with a thin category of 5 respondents (25%), the ginger decoction group had 7 respondents (35%) and the warm compress group had 5 respondents (25%). For the length of menstruation, the carrot juice group had a period of <7 days, there were 15 respondents (75%), the ginger decoction group had 13 respondents (65%) and the warm compress group had 10 respondents (50%).

Table 2 Average Reduction in Primary Menstrual Pain (Dysmenorrhea) Pre and Post Given Non-Pharmacological Treatment with Carrot Juice, Ginger Decoction and Warm Compresses

Group	N	Time								
		First day					Second day			
		Pre test	*Post 1*	*Post 2*	*Post 3*	*Post 4*	*Post 5*	*Post 6*	*Post 7*	*Post 8*
		Mean±SD	*Mean±SD*	*Mean±SD*	*Mean±SD*	*Mean±SD*	*Mean±SD*	*Mean±SD*	*Mean±SD*	*Mean±SD*
Carrot juice	20	4,65±1,631	2,75±1,517	2,60±1,635	3,50±1,433	3,80±1,576	2,65±1,663	2,50±1,638	3,15±1,309	3,50±1,504
P value[ab]		0,00	0,00[a]	0,00[a]	0,00 [a]	0,00 [a]	0,00[b]	0,00 [b]	0,00 [b]	0,00 [b]
Ginger decoction	20	4,45±1,468	2,30±1,418	2,50±1,504	3,00±1,556	3,50±1,395	2,20±1,399	2,40±1,392	2,70±1,261	3,10±1,586
P value[a]		0,00	0,00 [a]	0,00 [a]	0,00 [a]	0,00 [a]	0,00 [b]	0,00 [b]	0,00 [b]	0,00 [b]
Warm compress	20	4,65±1,663	3,55±1,932	4,35±1,755	4,55±1,638	4,65±1,663	3,55±1,932	4,10±1,744	4,45±1,701	4,45±1,669
P value[a]		0,00	0,00 [a]	0,14 [a]	0,15[a]	1,00 [a]	0,00 [b]	0,[00 b]	0,04 [b]	0,15 [b]

Based on table 2, it can be seen that there is a difference in pain after being given carrot juice and boiled ginger in post test 1 (30 minutes), post test 2 (60 minutes), post test 3 (90 minutes) and post test 4 (120 minutes) on the first and second day of menstruation compared to the warm compress group.

Table 3 Analysis of Menstrual Pain Reduction in the Non-Pharmacological Treatment Group with Treatment (Carrot Juice, Ginger Decoction and Warm Compresses)

Group	N	Mean pre mean±SD	Mean post mean±SD	Difference prepost mean±SD	Normality of difference	*P Value*
Carrot juice	20	4,65±1,631	2,50±1,638	2,15±0,007		
Ginger decoction	20	4,45±1,468	2,20±1,399	2,25±0,069	0,000	0,028
Warm compress	20	4,65±1,663	3,55±1,932	1,1±0,269		

Based on table 3, it can be seen that there is a significant difference between the carrot juice, ginger decoction and warm compress groups in reducing menstrual pain. Based on the average value, it was found that ginger decoction was more effective than carrot juice and ginger decoction in reducing menstrual pain (dysmenorrhea) on the first andsecond days of menstruation.

Table 5 Results of Multivariate Analysis

Variabel	B	EXP (B)	*p-value*	95% CI	
				Lower	Upper
Menarche	0,652	1,918	0,249	,534	5,809
Intervensi	1,644	5,175	0,008	1,533	17,475
Konstan	-1,384	,250	,250		

Based on table 5, it shows that the intervention given has a significant effect in reducing primary menstrual pain (dysmenorrhea) in adolescent girls. Giving intervention (carrot juice and ginger decoction) can reduce menstrual pain 5 times compared to adolescents who are not given intervention.

DISCUSSION

Based onthe analysis that has been done (p-value 0.00). This shows that there is a decrease in menstrual pain before and after being given non-pharmacological treatment with carrot juice. Treatment of primary menstrual pain is very necessary for adolescents who experience it. This can be done with pharmacological and non-pharmacological treatment. The use of pain relievers can indeed reduce pain, but the use of pain relievers will be addictive and cause dangerous side effects for users. This can be done using non-pharmacological, namely by complementing using natural ingredients. Indonesia is rich in various types of traditional medicine using fruits, vegetables, grains, roots and others.

Non-pharmacological treatment by doing light exercise, Compressing the painful area with warm water can be added by taking a warm bath aromatherapy to increase relaxation, as well as drinking nutritious herbal drinks to reduce menstrual pain, one way is to drink carrot juice (Daniel Martinus et al., 2022).

Carrots are a type of vegetable containing various vitamins, minerals,Very antioxidant and plant compound beneficial for the health of the human body, wrong one of them can treat menstrual pain or dysmenorrhea (Mangunsong et al., 2019). According to Fajria (2019), consume beta carotene in certain levels can provide analgesic and anti-inflammatory effects on the body. Among the types of vegetables another, the beta carotene content in carrots is the highest, namely an average of 12,000 IU. Meanwhile, the body's need for beta carotene per a day, according to experts is 15,000-25,000 IU (Styawan et al., 2019). The magnesium component in carrots can also be used to strengthen bones, activate vitamin B, relax muscles and nerves, clot blood and produce energy. Consuming vitamin E 2-3 days before and 2-3 days after menstruation can reduce cramps and anxiety associated with premenstrual syndrome (PMS).

Red ginger contains substances that can stop the work of prostaglandins that cause pain and inflammation of blood vessels, so that the pain experienced by respondents due to menstruation becomes lighter after drinking red ginger. Some components found in red ginger are gingerol, shogaol and zingerone. These components provide pharmacological and physiological effects such

as antioxidants, anti-inflammatory, analgesic, anti-carcinogenic, non-toxic, and non-mutagenic even at high concentrations. This means that red ginger contains substances that are effective in relieving pain and nausea during menstruation (Suparmi Suparmi, 2016).

According to (S Suparmi, 2017), the gingerol compound as the main content is an antioxidant and is strong and effective in overcoming inflammation. Red ginger is an ingredient in more than 50% of traditional medicines that can overcome conditions such as nausea, stomach cramps, fever, infection, and others.

Ginger is one of the ginger variants that has a higher essential oil content compared to other ginger variants. The essential oil contained in ginger contains the chemical gingerol which has a strong effect in inhibiting prostaglandin biosynthesis. Gingreol in ginger is also an anticoagulant, which can prevent blood clotting. This is very helpful in the discharge of menstrual blood. The ginger water was given to some female students on the first to third day of menstruation. The administration was in accordance with the procedure used, namely 10 grams of ginger, 10 grams of brown sugar, and 400 ml of water. The method of making it is to peel the ginger first, wash it thoroughly with running water, slice the ginger together with the brown sugar then boil it with 400 ml of water at a temperature of 30 degrees C, boil until the water is 200 ml left, remove it then drain the boiled ginger then let it stand for about 20 minutes. (Betty & Ayamah, 2021).

Based on the analysis that has been done (pvalue 0.00). This shows that there is a decrease in menstrual pain before and after being given non-pharmacological treatment with warm compresses. warm compress technique for 20 minutes with 10 minutes of hot water changes to maintain temperature, heat can dilate blood vessels, reduce muscle tension, increase tissue metabolism and increase capillary permeability. this heat reaction is used for therapy in various conditions that occur in the body (Maidartati, Hayati S, Hasanah AP,2018). The disappearance of primary menstrual pain (dysmenorrhea) after warm compresses is caused by impulse stimulation that prevents the sensation of pain from reaching the hypothalamus. In the gate control theory, it is said that skin stimulation activates A-beta sensory nerve fibers larger and faster, thereby reducing conduction to C nerve (fibers Sherwood L,2011). This is in accordance with research by Arfailasufandi R, Andiarna F, in Yogyakarta which stated that warm compresses are an alternative treatment to relieve menstrual pain that occurs by always paying attention to the correct way to achieve the desired results, to find out how to relieve menstrual pain, menstrual pain can be reduced and can also improve blood circulation, relieve pain, provide calm, relieve muscle spasms and eliminate joint stiffness.

CONCLUSIONS

Based on statistical tests, it was stated that there was a difference in the decrease in the scale of menstrual pain before and after being given carrot juice, ginger decoction and warm compresses. Ginger decoction was more effective than carrot juice and warm compresses in reducing primary menstrual pain (dysmenorrhea)in adolescent girls.

Suggestions based on the results of the study, it is expected that health workers provide information to adolescent girls about non-pharmacological treatment using carrot juice and ginger decoction to reduce primary menstrual pain experienced.

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