Jurnal eduHealt
Volume 15 , Number 01, 2024, DOI 10.54209/eduhealth.v15i01
ESSN 2808-4608 (Online)
https://ejournal.seaninstitute.or.id/index.php/healt

The effect of giving red ginger drinks (zingiber officinale var. Rubrum) on dysmenorrhea complaints in female students class of 2020 FK UMI

Ida Royani[1], Vira Rosa Riani[2], Zulfitriani Murfat[3], Fadli Ananda[4], Irmayanti Haidir Bima[5]
[1]Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran UMI, [2]Departemen Ilmu Gizi Fakultas Kedokteran UMI, [3]Departemen BiokimiaFakultas Kedokteran UMI, [4]Departemen Ilmu Obstetri dan Ginekologi Fakultas Kedokteran UMI, [5]Departemen Patologi Klinik Fakultas Kedokteran UMI

Article Info
Keywords:
Ginger drink,
Menstrual stomach pain (dysmenorrhea)

ABSTRACT
Dysmenorrhea is one of the diseases most commonly suffered by adolescent girls and is still a problem throughout the world. There are several methods that can be used to treat dysmenorrhea complaints, including administering drugs both pharmacological and non-pharmacological (herbs). Non-pharmacological treatments that are considered to help reduce dysmenorrhea complaints include the red ginger plant. This ginger drink has body warming, anti-rheumatic, anti-inflammatory and analgesic properties. Shogaol and gingerol compounds have the effect of reducing pain or soreness. To find out the effect of giving red ginger drink on complaints of dysmenorrhea in students of the 2020 class of FK UMI.Experimental research with a Quasi Experimental research design with a pre-post test only control group design. There was a change in menstrual abdominal pain (dysmenorrhea) in the Class of 2020 FK UMI students after giving red ginger drink, namely 12 respondents who experienced pain disappeared (40.0%), 11 respondents who experienced mild pain (36.7%) There were 4 respondents who experienced moderate pain (13.3%) and 3 respondents who experienced no change (10.0%). Red ginger drink (Zingiber officinale var. Rubrum) can relieve menstrual stomach pain (dysmenorrhea) for students of the Class of 2020 FK UMI.

Corresponding Author:
Ida Royani
Mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran UMI
ida.royani.dr@gmail.com

INTRODUCTION

Dysmenorrhea is one of the diseases most commonly suffered by adolescent girls and is still a problem throughout the world. Based on data from the World Health Organization (WHO) in 2020, there was an increase in the incidence of dysmenorrhea in adolescent girls worldwide by around 50%. On average, countries on the European continent experience dysmenorrhea rates between 45 and 97%. The highest prevalence was recorded in Finland, reaching 94%, while the lowest prevalence occurred in Bulgaria with a figure of 8.8%.

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Based on statistics published by the Indonesian Ministry of Health in 2019, it was revealed that 64.25% of the Indonesian population experienced dysmenorrhea. This figure is divided into 54.89% for primary dysmenorrhea and 9.36% for secondary dysmenorrhea. Similar findings were also revealed in previous research conducted by Susanto, Nasruddin, and Abdullah in 2013 in several areas of the Makassar municipality. The results of the study noted that of the 997 teenage girls studied, 93.8% or 935 cases of teenagers were found to be suffering from dysmenorrhea.

As a result of dysmenorrhea in women, a review of data in the United States shows an economic impact of up to 2 billion US dollars and a decrease in work productivity due to the loss of around 600 million working hours due to dysmenorrhea. In India, it is said that around 31.67% of female students face dysmenorrhea, and as many as 8.68% of them have difficulty attending lectures because they feel stomach pain during menstruation.

There are several methods that can be used to treat dysmenorrhea complaints, including administering drugs both pharmacological and non-pharmacological (herbal). Non-pharmacological treatments are considered to be able to help reduce dysmenorrhea complaints, one of which is the red ginger plant. Red ginger is very easy to obtain both in traditional markets and supermarkets. (Astuti and Hartinah, 2019). Currently, Indonesia has produced a variety of raw materials for non-pharmacological treatments, some of which have been successfully used by countries such as China and India. For example, red ginger production in these two countries reaches 70% of total global production. Meanwhile, Indonesia contributes around 11% to world production in this context. (FAO Statistics Database, 2016). Red ginger has a similar effect to mefenamic acid and ibuprofen in reducing stomach discomfort during menstruation or dysmenorrhea. Giving ginger drink does not have side effects on teenage girls who experience menstrual abdominal pain. (Rahayu and Nujulah, 2000).

Red ginger (Zingiber Officinale Var.rubrum) is believed to be able to relieve discomfort during menstruation or menstruation. This ginger drink has properties to increase body temperature, is anti-inflammatory and analgesic, and can help relieve rheumatic symptoms. The shogaol and gingerol compounds contained in red ginger can have an effect that reduces the sensation of pain and discomfort. In an anti-inflammatory context, red ginger operates by inhibiting the activity of enzymes in the cyclooxygenase (COX) cycle, thus preventing the release of these enzymes which could potentially cause inflammation.

Red ginger also has the ability to reduce contractions in the uterus, which can reduce discomfort during menstruation. (Pratiwi and Mutiara, 2017). Apart from that, red ginger also has essential oils and a spicy taste because it contains a ketone compound called zingerone. The levels of essential oils in red ginger are higher than other ginger variations. The essential oil in red ginger reaches around 3.9%, while emprit ginger has an essential oil content of around 1.5-3.5%, and elephant ginger only has an essential oil content of around 1.6%. (Mariza and Sunarsih, 2019). By detailing the problems that arise, the author is interested in investigating the impact of red ginger drink on dysmenorrhea complaints in female students of the 2020 class of FK UMI.

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METHOD

The research method applied in this study is experimental with a Quasi Experimental research design, using a pre-post test design only in the control group.

RESULTS AND DISCUSSION

In this study, participants had various characteristics, such as age range, menstrual habit patterns, monthly menstrual cycle, length of menstruation, as well as pre-test and post-test scores related to abdominal pain during menstruation (dysmenorrhea). This research was conducted on students from the Class of 2020 of FK UMI and involved giving red ginger drinks before and after the observation period.

Table 1. Characteristics of respondents

No.	Criteria	Amount	Persentace (%)
1	Age		
	21 years	22	73,4
	> 21 Years	8	26,6
	Total	30	100
2	Menstrual regularity Regular		
	Irregular	17	56,6
		13	43,4
	Total	30	100
3	Menstrual Monthly Cycle		
	28 Days	19	63,3
	<28 Days	11	36,7
	Total	30	100
4	Length of Menstruation 5-7 Days		
	>7 Days	16	53,4
		14	46,6
	Total	30	100

Of the 30 survey participants, the majority were 21 years old, consisting of 22 respondents (73.4%), while those aged over 22 years were 8 respondents (26.6%). A total of 19 people (63.3%) had a menstrual cycle of 28 days, while 11 respondents (36.7%) had a cycle of less than 28 days. The maximum duration of menstruation ranged between 5-7 days, with 16 respondents (53.4%), while more than 7 days was found in 14 respondents (46.6%). The majority of the 30 respondents stated that their menstruation was regular, namely 17 respondents (56.6%), while the other 13 respondents (43.4%) experienced irregular menstruation.

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Table 2. Frequency Distribution of Menstrual Abdominal Pain Before Giving Red Ginger Drink

Category	Persentace (%)	
	F	%
Light	13	43,3
Currently	11	36,7
Heavy	6	20,0
Total	30	100,0

From the data in table 2 above, it can be concluded that as many as 30 respondents who were students from the Class of 2020 of FK UMI in this study, before consuming the red ginger drink, the majority experienced mild pain, namely 13 people (43.3%). Meanwhile, a small number of respondents experienced moderate pain, 11 people (36.7%), and 6 people (20.0%) experienced severe pain.

Table 3. Frequency Distribution of Menstrual Abdominal Pain After Giving Red Ginger Drinks

Category	Persentace (%)	
	F	%
Pain Disappears	12	40,0
Light	11	36,7
Currently	4	13,3
No changes	3	10,0
Total	30	100,0

Based on the data listed in table 3 above, it can be concluded that of the 30 respondents who were students of the 2020 class of FK UMI in this study, after consuming the red ginger drink, almost all respondents who initially felt pain experienced a decrease. A total of 12 people (40.0%) no longer felt pain, 11 people (36.7%) experienced a mild decrease in pain, 4 people (13.3%) experienced a moderate decrease in pain, and 3 people (10.0%) did not experienced changes in their pain conditions.

Table 4. Changes in Menstrual Abdominal Pain Before and After Giving Red Ginger Drinks

	Paired Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig.(2-tailed)
Pair 1 Pre-Test-Post-Test	.733	1.617	.295	.129	1.337	2.483	29	.019

Based on the results of the paired T-test, the ρ value is 0.019, which is lower than the α value set at 0.05. Therefore, it can be concluded that the null hypothesis (Ho) is rejected,

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and the alternative hypothesis (Ha) is accepted. This indicates that there is an effect of giving Red Ginger Drink (Zingiber Officinale Var Rubrum) on menstrual abdominal pain (Dysmenorrhea) in students of the Class of 2020 of FK UMI. The data results clearly show that red ginger drink can reduce menstrual abdominal pain (dysmenorrhea).

Discussion

Menstrual Abdominal Pain Scale (Dysmenorrhea) Before Giving Red Ginger Drink

According to the results of research on 30 female respondents from the Class of 2020, FK UMI, before being given red ginger drink, the majority of people who experienced mild discomfort reached 13 individuals (43.3%). A small number of participants felt moderate discomfort, namely 11 people (36.7%), while 6 people felt severe discomfort (20.0%).

Dysmenorrhea is the experience of painful sensations during the menstrual cycle, usually characterized by a feeling of cramps focused in the lower abdominal area. This condition arises due to an imbalance of the hormone progesterone in the bloodstream, which appears as a result of psychological and physical factors during menstruation. Pain in the lower back area occurs due to the influence of high uterine prostaglandin hormones, abnormal uterine activity, and emotional or psychological factors. Women who experience dysmenorrhea have prostaglandin levels that are four times higher than women who do not experience dysmenorrhea. Primary dysmenorrhea generally appears at the beginning of menstruation, accompanied by pain that is colicky or crampy, often accompanied by symptoms such as nausea, vomiting and diarrhea.

During menstruation, progesterone levels increase. Progesterone has the effect of suppressing or preventing contractions in the uterus, while estrogen stimulates these contractions. In addition, when the endometrium undergoes a secretory phase, the formation of prostaglandins occurs which can trigger smooth muscle contractions. If there is an excessive increase in prostaglandins in the bloodstream, not only can it cause dysmenorrhea, but it can also cause other effects such as nausea, vomiting and diarrhea.

Menstrual Abdominal Pain Scale (Dysmenorrhea) Before Giving Red Ginger Drink

Based on the results of research on 30 respondents from the Class of 2020 students of FK UMI, after being given red ginger drink, around 40.0% of respondents who initially experienced pain reported that their pain had almost completely disappeared. In addition, 36.7% of study participants noted mild discomfort, 13.3% experienced moderate discomfort, and 10.0% experienced no change in the intensity of the discomfort they felt.

This shows that menstrual pain persists, either with or without treatment. The difference in the average level of menstrual pain before and after consuming red ginger drink shows that the drink is able to reduce the level of menstrual pain, although the reduction effect is limited. The findings from this study also show that after consuming red ginger drinks, the level of abdominal pain during menstruation in research participants decreased which can be seen from the increasingly significant differences in the pain scale. This shows that giving red ginger drink has a big influence on differences in the intensity of abdominal pain during menstruation, with a larger scale difference. The results of the

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differences in this scale also show that the greater the difference in the intensity of menstrual pain, the less the severity of the pain felt by the respondent.

The reduction in the level of abdominal discomfort during menstruation felt by participants in the post-test was caused by the presence of signals that suppressed the sensation of pain, so that the feeling of discomfort was reduced. These signals involve a warm sensation that occurs when red ginger drink is applied to the painful area of the lower abdomen. Local responses to high temperatures occur through stimulation of nerve endings in the skin that are sensitive to changes in temperature. This stimulation sends signals from outside the body to the hypothalamus, raising awareness of the temperature in that area, and triggering an adaptive response to keep body temperature within normal limits.

Red ginger has volatile compounds, such as terpenoids, and non-volatile compounds, such as gingerol, shagol, and paradol. These compounds play a role in inhibiting the activity of the cyclooxygenase (COX) enzyme, which results in a decrease in the release of prostaglandins which are responsible for inflammation. In this way, red ginger is able to inhibit the formation of prostaglandins, reducing pain. Ginger drink can be a non-pharmacological treatment option to relieve primary dysmenorrhea in adolescent girls. Its benefits lie in the compounds gingerol and shagol, which can help reduce menstrual cramps and are analgesic to relieve dysmenorrhea.

Effect of Giving Red Ginger on Changes in Dysminorrhea Pain Scale

The results of the study show that giving red ginger drinks has an effect on changes in pain levels in students of the Class of 2020 of FK UMI. Giving red ginger drink is considered one of the non-pharmacological measures used to reduce dysmenorrhea. The results of data analysis using the paired T-test show that the ρ value is 0.019, which is lower than the α value (0.05). Therefore, it can be concluded that consuming red ginger drink is useful in reducing stomach pain during menstruation (dysmenorrhea) in female students of the Class of 2020 FK UMI.

Red ginger contains essential oils and has a spicy taste because it contains a ketone compound called zingerone. (Andareto, 2015). The essential oil content in red ginger is higher when compared to other ginger variations. (Pramudya, 2016). Red ginger contains around 3.9% essential oil, while emprit ginger has an essential oil content ranging from 1.5 to 3.5%. Elephant ginger, on the other hand, only has around 1.6% essential oil content. (Hariana, 2013). Essential oils also have an additional role, namely stimulating the activity of digestive enzymes to increase their efficiency, while simultaneously treating acidity that can cause nausea, cramps and diarrhea. Therefore, ginger can be used to prevent or treat stomach problems, such as stomach ache and bloating. According to health experts, the use of ginger has even achieved a success rate of 75% as a reducer of morning nausea and an antidote to gastroenteritis (digestive tract infection). (Andareto, 2015).

Processed ginger products include various products, including fresh ginger, dried ginger, instant ginger, ginger powder, ginger syrup, ginger jam and crystal ginger. For generations, roasted red ginger skin until it turns black has often been used to treat diarrhea and dysentery problems. Apart from that, red ginger can also provide benefits for

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women who want to reduce discomfort during menstruation. (Lentera, 2002). Red ginger's effective ability as an analgesic allows its use as a pain reliever in joints or muscles, and also to reduce inflammation. (Andareto, 2015).

Suparmi (2016) carried out a study using a quasi-experimental design research method with a pretest-posttest non-equivalent control group, and sample selection was carried out using the quota sampling method. For statistical analysis, the Wilcoxon sign rank test was used. The findings from this study showed a decrease in pain levels after using tamarind ginger extract for 5 days.

Ginger helps reduce dysmenorrhoea pain because the compounds in it stimulate the body to control pain. The essential oils contained in ginger increase the body's ability to relieve cramps, especially during menstruation. Gita (2015) carried out a study with the aim of comparing the effectiveness of using ginger extract and turmeric extract in relieving primary dysmenorrhea pain in female students living in the Surakarta Health Polytechnic Midwifery dormitory. This research uses an experimental method with a true experimental approach and a pretest-posttest control group design. The sample was selected using purposive random sampling, with a total of 60 participants divided into three groups: the group that received ginger extract treatment, the group that received turmeric extract treatment, and the group that received placebo, each consisting of 20 participants. The results showed that the data distribution was normal, with a total of 56 participants at the end of the study (ginger extract=19, turmeric extract=19, and placebo=18). A significant difference was found in the effectiveness between ginger extract and turmeric extract in reducing primary dysmenorrhoea pain in female students in the Surakarta Health Polytechnic Midwifery dormitory (p=0.044.802).

Ginger can help reduce the pain that arises from primary dysmenorrhoea in teenagers, although it does not actually eliminate the sensation of pain completely. The severity of a person's pain can be influenced by various factors, including the pain threshold which varies for each person. In addition to non-pharmacological therapies, attention to body mass index and physical activity levels may also play a role in reducing pain severity. Therefore, it is important for each individual to pay attention to factors that can help reduce the intensity of pain.

CONCLUSION

The results of the study showed that students from the Class of 2020 of FK UMI experienced a decrease in abdominal discomfort during menstruation (dysmenorrhea) after consuming drinks made from red ginger. A total of 12 respondents (40.0%) reported that their pain had completely disappeared, while 11 respondents (36.7%) felt the pain was lighter. There were 4 respondents (13.3%) who experienced moderate pain, and 3 people (10.0%) did not report any changes. It is hoped that we will examine the human body's metabolism as a reaction to the beneficial contents of red ginger.

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