AIP Conference Proceedings

scitation.org/journal/apc

Volume 2679

The First International Conference on Neuroscience and Learning Technology (ICONSATIN 2021)

Jember, Indonesia • 18–19 September 2021

Editors • Arika Indah Kristiana and Ridho Alfarisi

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2021

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The committees of The First International Conference on Neuroscience and Learning Technology 2021 would like to express gratitude to all Committees for the volunteering support and contribution in the editing and reviewing process.

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INDEXED BY: Scopus sinta Science and Technology Index AIP Publishing

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Cite as: AIP Conference Proceedings **2679**, 020020 (2023); https://doi.org/10.1063/5.0112045
Published Online: 04 January 2023

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The Differences of Effectiveness Ginger Water Drink with Warm Compress Therapy on Dysmenorrhea in Adolescents at Senior High School of Sangkapura, Bawean Island

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Abstract. Menstrual pain or often called dysmenorrhea often occurs during adolescence and adolescents who experience menstrual pain will be affected by academic, social and daily activities. The purpose of this study was to analyze the differences in the effectiveness of giving warm water compress therapy and drinking ginger water during dysmenorrhea in adolescents in high school. The research design used Quasy-Experimental with one group pre-post test design. The population and sample size are all young women who experience dysmenorrhea in high school in Sangkapura, Bawean Island. Sampling using simple random sampling technique obtained a sample of 80 respondents. Data collection of menstrual pain or dysmenorrhea using VDS (Verbal Descriptor Scale) and data analysis using Wilcoxon and Mann Whitney test with < 0.05. The results showed that before being given ginger drink most (65%) experienced moderate pain and before being given a warm compress most (75%) experienced moderate pain and after being given ginger drink almost all (90%) experienced mild pain and after being given ginger ale warm compress most (65%) experienced mild pain. Wilcoxon test obtained p value 0.000 and mann whitney test p = 0.001 meaning that there is a difference in the effectiveness of giving ginger drink with warm compress therapy when experiencing dysmenorrhea. From this study, it was found that there were differences in the effectiveness of giving ginger water drinks with warm compresses to adolescents who experienced dysmenorrhea at the senior high school in Sangkapura, Bawean Island. It is hoped that the provision of warm water compress therapy and drinking ginger water can be applied independently by students when menstrual pain occurs (Dysmenorrhea) and maintain the therapy as a non-pharmacological therapy to overcome menstrual pain.

INTRODUCTION

Adolescence is a very important period of development in humans, beginning with the maturation of the reproductive organs or sexual physical organs so that later they are able to produce. Puberty in adolescent girls is marked by the appearance of menstruation. Every woman has a different time in getting the first menarche or menstruation. Various problems that arise during menstruation are gynecological problems that are often complained of in adolescents, such as menstrual irregularities, menorrhagia, dysmenorrhea which are the most frequently complained of and are the most frequent causes and can interfere with daily activities due to experiencing pain or cramps in the stomach (Eline, 2020).) Pain during menstruation causes discomfort in daily physical activities. These complaints relate to repeated absences at school or at work, which can impair productivity. 40-70% of women in their reproductive years experience menstrual pain, and 10 percent experience it to interfere with daily activities. Around 70-90 percent of cases of menstrual pain occur during

The First International Conference on Neuroscience and Learning Technology (ICONSATIN 2021)
AIP Conf. Proc. 2679, 020020-1–020020-7; https://doi.org/10.1063/5.0112045
Published by AIP Publishing. 978-0-7354-4300-6/$30.00

adolescence and adolescents who experience menstrual pain will be affected by their academic, social and sports activities [1][2].

Based on previous research, it was found that there were 1,769,425 people (90%) of women who experienced dysmenorrhea or menstrual pain with 10-15% experiencing heavy menstrual pain [3]. In the United States, it is estimated that almost 90% of women experience menstrual pain and 10-15% of them experience severe menstrual pain, which causes women to be unable to carry out any activities. In Indonesia, the incidence of dysmenorrhea is 64-25%, consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. Meanwhile in Indonesia, the figure is estimated at 55% of productive women who are tormented by dysmenorrhea [4]. Research by Hanum (2018) in Gresik Regency found that 86.7% had their first menstrual period or menarche at the age of 10-15 years, 76.7% with 3-7 days of menstruation and 80% experienced menstrual disorders (dysmenorrhea). According to research conducted by Dahlan & Syahminan (2017) in the city of Surabaya, 1.07% - 1.31% of the number of patients with dysmenorrhea came to the obstetrics division. Based on the initial sampling that was studied in December 2020 at the Senior High School in Sangkapura, it was found that interviews from 84 female students said that they experienced pain during menstruation. They feel cramps in the lower abdomen and radiate to the hip area, with an average pain scale of 3-7. They feel uncomfortable during activities and uncomfortable when attending school lessons and the treatment they do when dysmenorrhea is by lying down and resting in bed and taking pain medication.

Factors that cause dysmenorrhea are psychological factors, genetic factors, and endocrine factors [5]. Menstrual pain arises due to an increase in the hormone prostaglandin which makes the uterine muscles contract causing symptoms of cramps in the lower abdomen and sometimes even up to the hips, thighs, and back. Sometimes menstrual pain will feel very heavy accompanied by dizziness, fever, weakness and various stomach disorders such as nausea and vomiting. The severity of dysmenorrhea varies from woman to woman [6]. Menstrual pain that is not treated immediately will have a pathological negative impact (abnormalities or disorders) that can lead to death rates, and can lead to infertility. In addition, it can lead to emotional conflicts, such as anxiety and feelings of discomfort experienced by adolescents [1].

One way that can be done to overcome dysmenorrhea (menstrual pain) is to apply a warm compress. Warm compresses are used to meet the need for comfort, reduce or relieve pain, reduce or prevent muscle spasms and provide a warm feeling in certain areas (stomach). Warm compresses can be done by attaching a rubber bag filled with warm water or a towel that has been soaked in warm water, to the painful body part. The physiological impact of warm compresses is softening fibrous tissue, making the body muscles more relaxed, reducing or eliminating pain, and facilitating blood flow [7]. In addition to warm compresses, some plant materials are believed to reduce pain. Ginger contains shogaol and gingerol compounds that can reduce pain, as an anti-inflammatory by inhibiting the release of inflammatory prostaglandins [8]. Ginger rhizome contains important nutritional elements such as calcium, magnesium, iron, beta carotene and vitamin C. The iron contained in ginger can be used to prevent anemia in menstruation. While the calcium and vitamin C in ginger is useful for calming nerves and reducing pain [9]. Ginger drink has a useful value in reducing menstrual pain in adolescent girls with a p value of 0.001 so that young girls can comfortably study school activities [10].

METHOD

This type of research uses a quasi-experimental design with a one-group pre-post-test design approach. Sampling was carried out using Simple Random Sampling to get a sample of each group of 80 young women. The group of adolescents was divided into 2 groups, namely group 1 being given ginger drink and group 2 given the treatment of giving warm compresses. The location of this research is a high school in Sangkapura, Bawean. Research time June 2021. Warm compress therapy is given at a temperature of 37-40^0 C and given for 15-20 minutes. The warm ginger drink was given 150mL. This therapy was given from the first day to the third day for each adolescent who had dysmenorrhea. Measurement of dysmenorrhea using VDS (Verbal Descriptor Scale) to determine the level of pain experienced by adolescent girls with indicators 0 (no pain), 1-3 (mild pain), 4-6 (moderate pain), 7-9 (severe pain), 10 (very severe pain). Measurement of pain level (pre test) was carried out on the first day before treatment and measurement of pain level (post test) was carried out on day 3 after being given treatment. Analysis of the data used is the Wilcoxon and Mann Whitney statistical test with the SPSS 23 for windows program at a significance level of < 0.05.

RESULT

TABLE 1 Characteristics Of Respondents By Age, Age Menarche And Time Of Dysmenorrhea InThe Group 1 (Drinking Ginger) And Group 2 (Compress Warm) (N=80)

Characteristic of Respondents	Group 1 (Drinking Ginger)	(n=40)	Group 2 (Compress Warm)	(n=40)	Total	
	f	%	f	%	f	%
Age						
Ealy adolescent (10-12 years)	4	10	4	10	8	10
Middle Adolescent (13-15 years)	20	50	20	50	40	50
Late Adolescents (16-19 years)	16	40	16	40	32	40
Total	**40**	**100**	**20**	**100**	**80**	**100**
Age Menarche						
Early	2	5	2	5	4	5,0
Normal	26	65	28	70	54	67,5
Tarda	12	30	10	25	22	37,5
Total	**40**	**100**	**40**	**100**	**80**	**100**
Time of Dysmenorrhea						
First Day	22	55	24	60	23	57,5
First to Day Second	14	35	14	35	14	35,0
First to Day Third	4	10	2	5	3	7,5
Total	**40**	**100**	**20**	**100**	**40**	**100**

Based on table 1, it was found that in group 1 half (50.0%) of the respondents were in their middle adolescents, most of the menarche age (65.0%) were in the normal category and most of the time for dysmenorrhea (55.0%) was on the first day. In group 2, it was found that half (50.0%) of the respondents were in their middle teens, most of the age of menarche (70.0%) were in the normal category and most of the time for dysmenorrhea (60.0%) was on the first day.

TABLE 2 Distribution Of Respondents Based On Dysmenorrhea

No	Pain Scale	Group 1 (Drinking Ginger)		Group 2 (Compress Warm)	
		Total (%) *Pre*	Total (%) *Post*	Total (%) *Pre*	Total (%) *Post*
1	Mild Pain	6 (15)	36 (90)	4 (10)	26 (65)
2	Moderate pain	26 (65)	4 (10)	30 (75)	14 (35)
3	Severe Pain	8 (20)	-	6 (15)	-
	Total	40 (100)	40 (100)	40 (100)	40 (100)

Based on table 2 in group one before giving ginger drink, it was found that most (65.0%) respondents experienced moderate pain scale and after giving ginger drink almost all (90.0%) respondents with mild dysmenorrhea pain scale. In the second group before being given warm compresses, it was found that most (75.0%) respondents experienced moderate pain scale and after being given warm compresses, most (65.0%) respondents with mild dysmenorrhea pain scale.

TABLE 3 The Effect Of Drinking Ginger Water On Dysmenorrhea

Dysmenorrhea	Pain Scale						Total	
	Mild		Moderate		Severe			
	n	%	n	%	n	%	n	%
Pre Test	6	15%	26	65,0%	8	20%	40	100%
Post Test	36	90%	4	10%	-	-	40	100%
***Wilcoxon Sign Rank Test* ρ= 0,000**								

Based on table 3 in group one with intervention drinking ginger, the p-value on the dysmenorrhea pain scale pre-test and post-test in the intervention group was 0.000 or p <0.05. Based on the results of statistical tests using the Wilcoxon Sign Rank Test before and after being given ginger drink, the significance value of = 0.000 where <0.05, which means that there is an effect of ginger drink on the dysmenorrhea.

TABLE 4 The Effect Of Warm Compress Therapy On Dysmenorrhea

Dysmenorrhea	Pain Scale						Total	
	Mild		Moderate		Severe			
	n	%	n	%	n	%	n	%
Pre Test	4	10%	30	75%	6	15%	40	100%
Post Test	26	65%	14	35%	-	-	40	100%
***Wilcoxon Sign Rank Test* ρ= 0,000**								

Based on table 4 in group two with intervention warm compress therapy, the p-value on the dysmenorrhea pain scale pre-test and post-test in the intervention group was 0.000 or p <0.05. Based on the results of statistical tests using the Wilcoxon Sign Rank Test before and after being given a warm compress, the significance value of = 0.000 where <0.05, which means that there is an effect of warm compresses on the dysmenorrhea.

TABLE 5 Different Test Of Warm Compress Therapy And Drinking Ginger Water On Dysmenorrhea In Adolescents At Senior High School Of Sangkapura, Bawean Island

Variable	Group	Post-Test Mean	Δ	N	p (*Mann Whitney)*
Dysmenorrhea	1 (Drink Ginger)	2,1	-1,3	20	0,001
	2 (Compress Warm)	3,4		20	

Based on table 5, it was found that the group drinking ginger water had a significant reduction in pain scale, namely 3.35 compared to the warm compress group which only experienced a decrease of 2.05 while the average value of the difference after drinking ginger and warm compresses was -1, 3 and the Mann Whitney test, p value = 0.001. So it was found that there was an average difference in group 1 and group 2 after the intervention.

DISCUSSION

Dysmenorrhea pain scale before drinking ginger water and warm compresses

The results of the study in table 2 show that in group 1 before (pre-test) ginger water was given from 40 respondents, the results showed that the level of menstrual pain (dysmenorrhea) in adolescents, most of the 26 respondents (65.0%) had menstrual pain (dysmenorrhea) moderate, 6 respondents (15%) mild pain, and 8 respondents (20%) severe pain. In group 2 before (pre-test) warm compresses were given from 40 respondents,

the results showed that the level of menstrual pain (dysmenorrhea) in female students was mostly 30 respondents (75.0%) had moderate levels of menstrual pain (dysmenorrhea), 4 respondents (10%) mild pain, and 6 respondents (15%) severe pain.

The pain scale of respondents in the group of drinking ginger water and warm compresses before being given the intervention has a moderate pain category, namely on a scale of 2. According to the researcher, the age of menarche that is too early in some young women can pose a higher risk of experiencing dysmenorrhea compared to adolescents who menarche at normal age. and most women experience varying levels of cramps due to differences in hormones and age factors that cause a combination of menstrual pain levels in women. This is in accordance with the theory which states that the factors that influence dysmenorrhea are the first menstruation (menarche) at an early age (less than 12 years), women who have never given birth to live children (nullipara), menstrual blood in large numbers. or long menstrual periods and a family history of menstrual pain. This is also supported by another theory from Proverawati & Misaroh, (2010 which states that dysmenorrhea is associated with increased production of the hormone progesterone. The hormone progesterone is produced by connective tissue (corpus luteum). When the hormone progesterone is high enough produced, then complaints of dysmenorrhea arise [11].

The results of the study in table 1 show that in group 1 half (50.0%) of the respondents were in their middle adolescent, the age of menarche was mostly (65.0%) in the normal category and most of the time for dysmenorrhea (55.0%) on the day of first. In group 2, it was found that half (50.0%) of the respondents were in their mid-teens, most of the menarche (70.0%) were in the normal category and most of the time for dysmenorrhea (60.0%) was on the first day. According to researchers, usually the pain felt in women is on average moderate pain, the reproductive organs have begun to develop optimally, the possibility of pain being felt is less than age (<12 years). This is evidenced by the theory from hasina (2017) that menarche or the first menstruation is generally experienced by adolescents at the age of 13-14 years, but in some cases it can occur at the age of 12 years. The age of menarche is too young (≤ 12 years) where the reproductive organs have not developed optimally and there is still a narrowing of the cervix, there will be pain during menstruation because the female reproductive organs are not functioning optimally, while menarche is at a normal age, namely 13-14 years, the reproductive organs have worked optimally [2].

Dysmenorrhea pain scale after being given drinking ginger water and warm compresses

The results of the study in table 2 show that in group 1 after (post test) ginger water was given from 40 respondents, it was found that the level of menstrual pain (dysmenorrhea) in female students was almost entirely 36 respondents (90.0%) had menstrual pain levels (dysmenorrhea). mild and 4 respondents (10%) moderate pain. In group 2 after (post test) warm compresses were given from 40 respondents, the results showed that the level of menstrual pain (dysmenorrhea) in adolescents, most of the 26 respondents (65.0%) had mild menstrual pain (dysmenorrhea) and 14 respondents (35.0) %) moderate pain.

The pain scale of respondents in the group drinking ginger water and warm compresses after being given the intervention has a mild pain category, namely on a scale of 1. According to the researcher, giving ginger water drinks in group 1 and warm compresses in group 2 is done when they have done a pre-test to determine the menstrual pain scale. The act of giving ginger drinks and warm compresses can provide physiological effects such as helping the body relax physically, thereby helping to heal and prevent pain, including reducing menstrual pain in women. This is evidenced by the theory Uliyah & Hidayat (2016) which states that warm compresses provide a warm feeling to meet the need for comfort, reduce or relieve pain, reduce or prevent muscle spasms and provide a warm feeling in certain areas and provide a warm feeling in certain areas. by using liquids or tools that cause warmth to the parts of the body that need it. Warm compresses serve to overcome or reduce pain where heat can relieve pain by reducing tension [7].

This is supported by the theory Abdul Salamet (2018) which states that in addition to warm compresses, red ginger (Zingiber officinale) is ginger that can be used as a drink that has warm, anti-rheumatic, anti-inflammatory and analgesic properties. The shogaol and gingerol compounds can effectively reduce pain. Red ginger as an anti-inflammatory by its way of working is to inhibit the work of enzymes in the cyclooxygenase (COX) cycle so that it can inhibit the release of these enzymes to prostaglandins that cause inflammation. Menstrual pain that is not treated immediately will have a pathological negative impact

(abnormalities or disorders) that can lead to death rates, and can lead to infertility. In addition, it can lead to emotional conflicts, such as anxiety and feelings of discomfort experienced by women [12][13][14].

Effect of drinking ginger water and warm compresses on dysmenorrhea

Based on table 3 in group 1 (drinking ginger water), almost all respondents (90.0%) experienced a decrease in menstrual pain with a mild pain scale and a small percentage (10%) with a moderate pain scale. In group 2 (warm compresses) the results showed that most of the respondents (65%) experienced a decrease in menstrual pain with a mild pain scale and almost half (35%) with a moderate pain scale. The results of the Wilcoxon sign rank test statistic with SPSS with a significance level of = 0.05 obtained P value = 0.000 (0.000 <0.05) in groups 1 and 2, then H_0 is rejected which means there is an effect of giving warm water compress therapy and drinking water ginger against dysmenorrhea.

According to researchers, menstrual pain (dysmenorrhea) in adolescents can be treated with pharmacological and non-pharmacological treatments, simple treatments that can be used by giving ginger drinks and warm compresses. The procedure in group 1 is that the researcher prepares warm ginger water to be given to the respondent then is asked to sit down then the respondent takes 1 glass (150 ml) per 1 respondent and pours ginger water in the glass and then drinks it. And the procedure in group 2 is that the respondent is in a supine sleeping position, the lower clothes are opened for the location of giving warm water compresses then a small towel pad is placed on the lower abdomen to avoid irritation of the skin and then do warm water compresses for 15-20 minutes on the respondent. . This is in accordance with the theory (Setiawan, 2015) that the consumption of ginger has a beneficial effect on reducing the pain and frequency of migraine headaches, and research on its action in rheumatic conditions shows a beneficial effect. Ginger has benefits, among others, to stimulate the release of the hormone adrenaline and widen blood vessels, so that blood flows faster and smoother. This causes blood pressure to drop. The most important component is gingerol which is an anticoagulant, which prevents blood clots. Ginger can inhibit serotonin as a chemical messenger that causes the stomach to contract and cause nausea [15][16].

By giving a warm compress, there will be dilation of blood vessels so that it will improve blood circulation in the tissue. According to researchers, the consumption of warm ginger water in women with dysmenorrhea can relieve menstrual pain because drinking warm ginger water can make blood vessels not stiff or cramp so that the abdominal muscles relax. This is supported by the theory (Uliyah & Hidayat, 2016) that changes in the size of blood vessels will facilitate circulation of oxygen, prevent muscle spasm, provide a sense of warmth, make the muscles of the body more relaxed, and reduce pain [7]

Differences in the Effects of Drinking Ginger Water and Warm Compresses on Dysmenorrhea

Based on table 5, it was found that group 1 (drinking ginger water) had a significant decrease in the average pain scale, which was 3.35 compared to group 2 (warm compresses) which only experienced a decrease of 2.05 while table 5.6 shows the average value. the difference after drinking ginger and warm compresses is -1.3 and the mann whitney test obtained p value = 0.001. So it was found that there was an average difference in group 1 and group 2 after the intervention, where drinking ginger water was more effective than warm compresses in reducing dysmenorrhea in respondents.

According to researchers in group 1 (drinking ginger water) and group 2 (warm compresses) each had an effect on the menstrual pain scale but what experienced a significant decrease was by drinking ginger because ginger had an effect, namely hot and spicy taste, where this hot taste can relieve pain, stiffness and muscle spasms or the occurrence of vasodilation of blood vessels, maximum benefits will be achieved within 20 minutes so that the pain scale in patients with dysmenorrhea is reduced or decreased. While the intervention of warm compresses also had a significant effect, it was only different in the average of 1.3, the warm effect of the compresses can cause vasodilation in blood vessels which will increase blood flow to the tissues, ginger compresses contain cyclo-oxygenation enzymes that can reduce pain. in primary dysmenorrhea.

This is in accordance with the theory Adib Rad H. et al. (2018). that ginger (Zingiber officinale) has properties that can overcome pain during menstruation. This red ginger drink is warming the body, antirheumatic, anti-inflammatory and analgesic. In addition, red ginger can also inhibit the occurrence of uterine contractions which can cause pain during menstruation and is supported by the theory (Yulita, 2015) where warm compresses provide a warm feeling in certain areas by using fluids or tools that cause warmth to the parts of the body that need and provide

warmth. Compression is done by using hot jars wrapped in a cloth by conduction, there is a transfer of heat from the bladder into the body so that it will cause dilation of blood vessels and there will be a decrease in muscle tension so that the menstrual pain felt will decrease or disappear [14]

CONCLUSION

From this study, it was found that there were differences in the effectiveness of giving ginger water drinks with warm compresses to adolescents who experienced dysmenorrhea at the senior high school in Sangkapura, Bawean Island. It is hoped that the provision of warm water compress therapy and drinking ginger water can be applied independently by students when menstrual pain occurs (Dysmenorrhea) and maintain the therapy as a non-pharmacological therapy to overcome menstrual pain.

ACKNOWLEDGMENTS

This research was supported by LPPM – Universitas Nahdlatul Ulama Surabaya

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