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Effectiveness Of *Clittoria Ternatea* And *Zingibers Officinale* Concoction On The Reduction Of Dysmenorrhea in Adolescent Girls

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ABSTRACT

Dysmenorrhea or menstrual pain is abdominal pain originating from uterine abdominal cramps, occurring during menstruation due to sloughing of the endometrial layer. The prevalence of dysmenorrhea varies widely in various countries, ranging from 16-91%; the incidence in Indonesia ranges from 45-95%, while in the Special Region of Yogyakarta, as much as 52%, and in Sleman district, as much as 88.64%. The purpose of the study was to determine the effectiveness of steeping butterfly pea (Clitoria Ternatea) and ginger concoction (Zingibers Officinale) on reducing menstrual pain (dysmenorrhea) in adolescent girls. The research method used was Quasi Experiment Two Group Pretest-Posttest design. The subjects in this study were 90 respondents who experienced menstrual pain and met the criteria. Data analysis using the Wilcoxon test and Mann-Whitney test. The results of this study showed that the average menstrual pain before being given butterfly pea brew was 5.97. After being given Butterfly Pea Brew, the average menstrual pain was 0.51 with a P-value of 0.000, less than 0.05, meaning that there was a difference in menstrual pain felt before and after being given Butterfly Pea Brew. The mean value of menstrual pain before being given a ginger concoction is 6.02. After being given a ginger concoction, it decreased to 0.44 with a P-value of 0.000, less than 0.05, meaning that there is a difference in menstrual pain felt before and after a ginger concoction. This study concludes that butterfly pea brew and ginger concoction effectively reduce menstrual pain (dysmenorrhea).

Keywords: Menstrual Pain; Butterfly pea; Ginger concoction; Adolenscent

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INTRODUCTION

Adolescent reproductive health is a health approach that consists of two sex and age categories. The age category referred to in the reproductive health approach is adolescents. Menstruation can be a sign that an adolescent girl is ready to reproduce biologically; in the menstrual period, there are several problems, including dysmenorrhea. Therefore, serious attention must be given to this category.(1)

Dysmenorrhea is also known as menstrual cramps or menstrual pain. Dysmenorrhea is often called "Painful period" or painful menstruation. This menstrual pain frequently occurs mainly in the lower abdomen and can spread to the lower back area, waist, pelvis, upper thighs, and even to the calves. Menstrual pain is accompanied by cramps that come from very intense contractions of the uterine muscles and cause muscle tension during the process of removing menstrual blood from the uterus. The muscle tension occurs not only in the abdomen but also in the supporting muscles in the lower back area, waist, pelvis, thighs, and even calves.(2)

The prevalence of dysmenorrhea varies widely in different countries, ranging from 16%-91% and 2%-40%, according to the World Health Organization (WHO) in 2022, as many as 94% of young girls aged 10-20 years and 8.8% of women aged 19-41 years experience menstrual pain on a mild to severe scale(3). It was found that the incidence of dysmenorrhea in Indonesia among women of productive age ranged from 45 - 95%, consisting of 72.89% primary dysmenorrhea and 27.11% secondary dysmenorrhea.(4) The incidence of dysmenorrhea in the Special Region of Yogyakarta, experienced by women of productive age, was 52%. (5) The incidence of dysmenorrhea in the Sleman area was 88.64%, and as many as 11.36% said they did not experience pain during menstruation. (6)

Efforts to manage dysmenorrhea can be made pharmacologically, namely by giving analgesic drugs of the nonsteroidal anti-inflammatory drugs (NSAIDs) group, such as ibuprofen, mefenamic acid, and aspirin. 38% of women tend to use pharmacological therapy to manage dysmenorrhea. Efforts to deal with dysmenorrhea can also be made with non-pharmacological therapy, namely with distraction, relaxation, structured imagination, warm and cold compresses, and the provision of herbal ingredients.(7) Based on a literature review conducted, it is stated that the treatment to reduce menstrual pain in a non-pharmacological manner has very low side effects and even has no side effects, so non-pharmacological therapy is highly recommended as an alternative to handling menstrual pain.8 One alternative to non-pharmacological treatments in reducing menstrual pain is the use of local food ingredients in the form of butterfly peas and ginger.(9)

Preliminary studies were conducted at SMK YPKK 2 Sleman by distributing Google forms containing menstrual pain screening questionnaires to class X students, totaling 176 people. The survey results obtained data that 175 students have menstruated, and 103 of them experience primary menstrual pain every cycle. Almost every day, the School Health Service (UKS) of SMK YPKK 2 Sleman receives students who experience dysmenorrhea (menstrual pain). The treatment given is using anti-pain medications such as mefenamic acid and ibuprofen.

Based on this background, researchers are interested in examining the effectiveness of administering butterfly pea (*Clitoria Ternatea*) and ginger concoction (*Zingibers Officinale*) against dysmenorrhea pain.

METHODS

This research is a quantitative study using a quasi-experimental design with a two-group pretest-posttest design to determine the effectiveness of steeping butterfly pea (*Clitoria ternatea*) and ginger concoction (*Zingibers Officinale*) on reducing menstrual pain (dysmenorrhea) in adolescent girls. The research was conducted in Sleman Regency, namely SMK YPKK 2 Sleman from September 2022 to February 2023. The research design is as below:

Butterfly pea brew group : Q1 ⟶ Q2

Ginger concoction Group : Q3 ⟶ Q4

Description: Q1 : Pretest of Butterfly pea brew group

Q2 : Posttest of Butterfly pea brew group

Q3 : Ginger concoction Group Pretest

Q4 : Posttest Ginger concoction Group

The population in this study were adolescent girls in class X of YPKK 2 Sleman Vocational High School who experienced primary menstrual pain, namely 103 female students—determination of samples based on inclusion and exclusion criteria using a purposive sampling technique. The sample size was calculated using the Slovin formula and obtained as many as 90 respondents who were divided into 2 groups, namely 45 respondents in the butterfly pea brewing group and 45 respondents in the ginger concoction group. Inclusion criteria include: Students who have experienced menstruation, students who experience dysmenorrhea, and students who are willing to become respondents. The exclusion criteria include Students who have reproductive disorders and students who have blood disorders. The first stage of research preparation is to obtain a research permit, followed by submitting a preliminary study application to the research site and collecting initial data, namely screening all class X students at YPKK 2 Sleman Vocational High School who experience dysmenorrhea and then identifying respondents according to the inclusion and exclusion criteria. Respondents selected according to the inclusion criteria are then asked to fill out pretest and observation sheets, including the respondents' identities.

Furthermore, respondents who experience menstruation will be asked to fill out a pretest questionnaire containing the Numeric Rating Scale (NRS) to determine the degree of dysmenorrhea felt. Furthermore, respondents will be given treatment according to their group during the first, second, and third days of menstruation. Butterfly pea in the form of simplistic preparation weighing 2 grams brewed with boiling water as much as 100cc, ginger concoction in the form of instant powder preparation weighing 20 grams brewed with boiling water as much as 100cc. The treatment was given once every day for three consecutive days, after which a post-test was completed by filling out the questionnaire again. Measurement of the degree of dysmenorrhea in this study uses the Numeric Rating Scale (NRS),

a standardized pain measurement tool. Meanwhile, other supporting instruments researchers can use in conducting research are observation sheets and dysmenorrhea screening. The butterfly peas used in this study are in the form of simplistic preparations, while the ginger used is in the form of instant ginger preparations obtained from Merapi Farma Herbal to ensure that the ginger has no mixture of sugar and other ingredients. Researchers collected data in several ways, including using observation techniques, identification, and filling out observation sheets. The data that has been collected is then analyzed using the SPSS application, which is then carried out with a non-parametric analysis test, namely the Wilcoxon test, to determine the average of each group before and after treatment, with the results of the P-Value <0.05 means that there are differences in menstrual pain before and after treatment in each group, namely the butterfly pea group and the ginger concoction group. The average of the butterfly pea group and the ginger concoction group used the Mann-Whitney test. The type of data in this study is primary data obtained directly from respondents. Data processing is done by rechecking data and information from respondents and giving codes. Then, the researcher enters the data into the master table, which is processed and analyzed using a computer statistical program. After the data is processed and analyzed, the researcher compiles it in a distribution table and then obtains an overview of each variable. Data was obtained by researchers through observation and filling out questionnaires by respondents. This research was conducted at YPKK 2 Sleman Vocational High School. The time used for research, namely September 2022 to February 2023.

RESULTS

Univariate Analysis

Characteristics of respondents based on age, age of menarche, and menstrual cycle in the following table 1:

Based on Table 1. it can be seen that the characteristics of respondents in the butterfly pea group based on the age of the respondents were mostly 15 years old, namely 24 respondents (53.3%). In the ginger concoction group, most respondents were 16 years old, namely 20 respondents (44.4%). The characteristics of respondents based on the age of menarche, namely in the butterfly pea group, the most at the age of 13 years, namely 16 respondents (35.5%), while in the ginger concoction group, the most at the age of 12 years, namely 14 respondents (31.1%).

Characteristics of respondents based on the menstrual cycle of respondents, both in the butterfly pea and ginger concoction groups, most had a menstrual cycle of 24-35 days, with the number of each group of 43 respondents (95.6%).

Table 1. Characteristics of Respondents Based on Age, Menarche Age and Menstrual Cycle

Characteristics	Respondent Group			
	Butterfly pea Group		Group of Ginger concoctions	
	n	%	n	%
Age				
15 years old	24	53,3	17	37,8
16 years old	18	40,1	20	44,4
17 years old	3	6,6	7	15,5
18 years old	0	0	1	2,3
Total	**45**	**100**	**45**	**100**
Age of Menarche				
9 years old	0	0	2	4,5
10 years old	0	0	1	2,3
11 years old	9	20	12	26,6
12 years old	14	31,1	14	31,1
13 years old	16	35,5	6	13,4
14 years old	6	13,4	7	15,6
15 years old	0	0	3	6,5
Total	**45**	**100**	**45**	**100**
Menstrual cycle				
24-35 days	43	95,6	43	95,6
≤ 24 days	1	2,2	2	4,4
≥ 35 days	1	2,2	0	0
Total	**45**	**100**	**45**	**100**

Level of menstrual pain before and after Butterfly Pea brew application

Table 2. Level of menstrual pain before and after administration of butterfly pea brew

Levels of menstrual pain	Before Giving		After Giving	
	N	%	N	%
No Pain	0	0	37	82,2
Minor Pain	9	20,1	7	15,5
Medium Pain	22	48,8	1	2,3
Severe Pain	11	24,4	0	0
Very severe pain	3	6,7	0	0
Total	**45**	**100**	**45**	**100**

Table 2 shows that of the 45 respondents in the Butterfly Pea group before being given Butterfly Pea Brew, most experienced moderate menstrual pain, namely 22 respondents (48.8%). Then, after being given Butterfly Pea Brew, most did not feel menstrual pain anymore, namely 37 respondents (82.2%).

Level of menstrual pain before and after ginger concoction administration

Based on table 3. shows that of the 45 respondents in the ginger concoction group before being given ginger concoction brew, most respondents experienced moderate menstrual pain, namely 23

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respondents (51.2%). Then after being given ginger concoction brew, most did not feel menstrual pain anymore, namely 36 respondents (80%).

Table 3. Level of menstrual pain before and after ginger concoction administration

Levels of menstrual pain	Before Giving		After Giving	
	n	%	n	%
No Pain	0	0	36	80
Minor Pain	8	17,7	9	20
Medium Pain	23	51,2	0	0
Severe Pain	11	24,4	0	0
Very severe pain	3	6,7	0	0
Total	**45**	**100**	**45**	**100**

Bivariate Analysis

Normality Test

The normality test in this study used the Kolmogrov-Smirnov statistical test. The basis for decision-making in the Kolmogrov-Smirnov test is if the significance value> 0.05, and then the data is declared normally distributed; if the significance value <0.05, then the data is declared not normally distributed.

Table 4 Normality Test of Pre-Test and Post-Test Menstrual Pain Levels

Treatment Group		Significance
A1 Group	Pre Test	0,001
	Post Test	0,000
A2 Group	Pre Test	0,000
	Post Test	0,000

Based on table 4. shows that the data before and after treatment in the butterfly pea group and ginger concoction group have a significance value <0.05, which means that the data is not normally distributed.

Statistical Test

Based on the results of the normality test, the data were not normally distributed, so the statistical test used to determine the average menstrual pain before and after treatment in paired samples was the Wilcoxon test. The Wilcoxon test is an alternative to the Paired T-Test test if the data is not normally distributed.

The statistical test used to determine the mean pain after treatment in unpaired samples, namely butterfly pea and ginger concoction, is the Mann Whitney test. Mann Whitney test is used as an alternative to the Independent T-Test test.

Table 5. Mean of Menstrual Pain Before and After Giving Butterfly pea

Mean		Standar Deviation	Z	P-Value
Pre Test	5,97	2,083	-5,898	0,000
Post Test	0,51	1,140		

Based on the results of the analysis using the Wilcoxon test, it shows that in the butterfly pea group, the average menstrual pain felt before giving butterfly pea brew is 5.97, then the average menstrual pain after administration has decreased to 0.51 with a P-Value of 0.000 <0.05, this shows that there is a difference in menstrual pain before and after giving butterfly pea brew.

Table 6. Mean Menstrual Pain Before and After Ginger Concoction Administration

Mean		Standard Deviation	Z	P-Value
Pre Test	6,02	2,094	-5,886	0,000
Post Test	0,44	0,989		

Based on the results of the Wilcoxon test analysis show that the average menstrual pain felt in the ginger concoction group before treatment is 6.02. The average menstrual pain after treatment is 0.44 with a P-value of 0.000 <0.05, so it can be concluded that there is a significant difference before and after giving ginger concoction.

Table 7. Mean of Menstrual Pain after Administration of Butterfly pea and Ginger concoction

Group	Z	P-Value
A1 Group	-0,118	0,906
A2 Group		

Based on Table 7. the results of the Mann-Whitney test on the post-test showed a P-Value (0.906> 0.05), which means that broadly speaking, there is no significant difference in the reduction of dysmenorrhea between steeping butterfly pea and ginger concoction after treatment.

DISCUSSION

Respondent Characteristics

The results of the analysis of the characteristics of respondents based on age showed the highest percentage of the butterfly pea group with an age of 15 years, as many as 24 people (53.3%), and the ginger concoction group with an age of 16 years as many as 20 people (44.4%). Adolescence or puberty is between 10 to 19 years and is a transition period after childhood and before adulthood. The most important event that occurs in adolescent girls is the arrival of the first menstruation, called menarche.

Based on Rosyida's research in 2020, the characteristics of respondents based on the age of menarche showed the highest percentage of the butterfly pea group with the age of menarche 13 years

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as many as 16 people (35.5%), and the ginger concoction group with the age of menarche 12 years as many as 14 people (31.1%).[10]

The characteristics of respondents based on the menstrual cycle of the two groups, namely the butterfly pea group and the ginger concoction group, both showed the highest percentage of the 24-35 day cycle, namely 43 people (95.6%). The results of research that are in line with this study are research conducted by Kristina et al,. (2021).[11]

Level Of Menstrual Pain Before And After Administration Of Butterfly Pea

The level of menstrual pain felt before giving butterfly pea brew to adolescent girls at SMK YPKK 2 Sleman showed that of the 45 respondents, most felt moderate menstrual pain, namely 22 respondents (48.8%), severe pain 11 respondents (24.4%), mild pain nine respondents (20.1%) and very severe pain as many as three people (6.7%). After giving butterfly pea brew, 22 respondents experienced moderate pain, 21 did not feel pain anymore, and one other respondent decreased to mild pain. Furthermore, 11 respondents experienced severe pain; 6 did not feel pain anymore, and five other respondents decreased to mild pain. Furthermore, nine respondents who experienced mild pain did not feel pain anymore, three respondents who experienced severe pain, one respondent did not feel pain anymore, one respondent decreased to moderate pain, and one respondent decreased to mild pain.

Based on the results of statistical tests using the Wilcoxon Test show that the average menstrual pain before giving Butterfly Pea brew is 5.97. After giving Butterfly Pea brew, the average pain becomes 0.51 with a P-Value of 0.000 <0.05, so these results indicate a difference in menstrual pain before and after giving butterfly pea brew.

Butterfly peas in the form of simplistic preparations weighing 2 grams is brewed with boiling water as much as 100cc and given to adolescent girls who experience dysmenorrhea on the first day to the third day of menstruation at a dose of 1 time a day.

The pharmacological potential of butterfly peas, among others, is as an antioxidant, antibacterial, anti-inflammatory and analgesic, antiparasitic and antiviral, antidiabetic, anticancer, antihistamine, immunomodulator, and potential role in the central nervous system (CNS).[12]

Research by Sembiring et al. (2022) on the Effectiveness of Combination Therapy of Giving Butterfly Pea Brew / Butterfly Pea (Clittoria Ternatea) and Lamaze Exercise to Reduce Menstrual Pain (Dysmenorrhea) in Adolescent Girls. The results showed that there was a decrease in the average pain felt before treatment, which was 2.37 to 1.95 after treatment, with a p-value of 0.013 <0.05. Thus, it can be concluded that steeping butterfly peas effectively reduces menstrual pain (dysmenorrhea) in adolescent girls.[12]

Level of menstrual pain before and after administration of ginger concoction

The level of menstrual pain felt by respondents before the administration of ginger concoction showed that out of 45 respondents, most of them thought moderate pain, namely 23 respondents (51.2%), severe pain as many as 11 respondents (24.4%), mild pain as many as eight respondents (17.7%) and very severe pain as many as three people (6.7%).

After giving ginger concoction to 23 respondents who experienced moderate pain, 21 of them did not feel pain anymore, while 2 other respondents decreased to mild pain. Furthermore, 11 respondents experienced severe pain, 7 of them did not feel pain anymore, while 4 other respondents decreased to mild pain. Furthermore, 8 respondents who experienced mild pain did not feel pain anymore, and 3 respondents who experienced severe pain, 2 of them decreased to mild pain, and 1 other respondent did not experience pain anymore.

Based on the results of statistical tests with the Wilcoxon test showed that in group A2 (ginger concoction), before the administration of ginger concoction, the average menstrual pain was 6.02. After the administration of ginger concoction, the average menstrual pain became 0.44 with a P-Value of 0.000 <0.05, meaning that ginger concoction effectively reduces menstrual pain (dysmenorrhea) in adolescent girls.

Ginger concoction in the form of instant powder preparation weighing 20 grams brewed with boiling water as much as 100cc and given to adolescent girls who experience dysmenorrhea on the first day to the third day of menstruation at a dose of 1 time a day.

In this study, it was found that ginger concoction can reduce menstrual pain; this is because ginger has essential oil content that can inhibit inflammation then, block prostaglandins, and inhibit cyclooxygenase enzymes and lipooksigenase enzymes, which result in reduced menstrual pain and warm from ginger can help stimulate blood circulation.[13]

Research by Ramli and Santy, (2017) on "The Effectiveness of Ginger concoction(*Zingibers Officinale*) and Rosella Tea(Hibiscus Sabdariffa) Against Changes in Menstrual Pain Intensity" showed that the average menstrual pain before treatment was 348.9. After treatment, it decreased to 213.9 with a P-Value of 0.000 <0.05; thus, it can be concluded that ginger concoction effectively reduces menstrual pain (dysmenorrhea) in adolescent girls.[14]

Level Of Menstrual Pain After Administration Of Butterfly Pea and Ginger concoction

In this study, there was no significant difference in the mean between steeped butterfly pea and ginger concoction with a P-value of 0.906> 0.05, which means that generally, there is no significant difference in dysmenorrhea reduction between steeped butterfly pea and ginger concoction after treatment. This is because both ingredients have ingredients that play a role in reducing menstrual pain. Butterfly peas contain high antioxidants that are useful as anti-inflammatories and can improve blood circulation, while ginger contains essential oils that can inhibit inflammation and block prostaglandins, and the warm sensation after drinking ginger can help stimulate blood circulation.[13].

CONCLUSIONS AND RECOMMENDATIONS

Research conducted at SMK YPKK 2 Sleman showed that out of a total of 175 grade X students, 103 experienced dysmenorrhea from mild to very severe. The study showed that steeping butterfly pea and ginger concoction effectively reduced the degree of primary dysmenorrhea after three days of administration. Dysmenorrhea treatment efforts carried out by the School Health Unit previously pharmacologically, namely by administering analgesic drugs of nonsteroidal anti-inflammatory drugs

(NSAIDs) such as ibuprofen, mefenamic acid, and aspirin. The results of this study are expected to be a source of information in providing health services both independently and collaboratively in alternative services through complementary therapies, one of which is the administration of steeping butterfly pea (*Clitoria Ternatea*) and ginger concoction (*Zingibers Officinale*).

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REFERENCES

1. Elvira M. Pengaruh Pijat Endorphine Terhadap Skala Nyeri Pada Siswi SMA Yang Mengalami Dismenore. J iptek Terap. 2018;2:155–6.
2. Sinaga E, Saribanon N, Suprihatin, Sa'adah N, Salamah U, Murti YA, et al. Manajemen Kesehatan Menstruasi. Universitas Nasional IWWASH Global One; 2017.
3. Isslabella CM, Prabandari FH, Ananti Y, Arisandi D. Online Education in Reducing Dysmenorrhea Pain During the Covid-19 Pandemic. J Heal. 2022;9(1):53–62.
4. Devita H, Sarisma N, Pasalina PE. Hubungan Jenis Makanan Yang Dikonsumsi Dengan Kejadian Dismenore Pada Remaja Putri. J Ilm PANNMED (Pharmacist, Anal Nurse, Nutr Midwivery, Environ Dent. 2019;17(2):255–9.
5. Sugiyanto, Luli NA. Hubungan Aktivitas Fisik dengan Tingkat Dismenore pada Siswi Kelas XII SMK Negeri 2 Godean Sleman Yogyakarta. Univ Res Colloquim 2020 [Internet]. 2020;7–15. Available from: http://repository.urecol.org/index.php/proceeding/article/view/979
6. Savitriyanti E. Hubungan Pengetahuan Tentang Dismenore Dengan Sikap Menghadapi Dismenore Pada Siswi Kelas VIII SMP Negeri 3 Mlati Sleman. 2020;
7. Ramdania F, Titi Legiati. Pengaruh Pemberian Air Jahe Terhadap Penurunan The Effect Of Ginger Water Towards Reducing Dysmenore. 2022;2(3):896–905.
8. Aboualsoltani F, Bastani P, Khodaie L, Fazljou SMB. Non-Pharmacological Treatments of Primary Dysmenorrhea: A systematic Review. Arch Pharm Pract. 2020;1:136.
9. Nevriansyah E, Retno D, Faradina R, Dani A. Computational Study of Telang Flower Extract (Clitoria ternatea) As an Anti-inflammantory Drug. 2022;1:8–17. Available from: https://journals.insparagonsociety.org/index.php/electrolyte8
10. Rosyida DAC. Kesehatan Reproduksi Remaja dan Wanita. Yogyakarta: PT. Pustaka Baru; 2019.
11. Kristina C, O H, R Z. Perbandingan Teknik Relaksasi Otot Progresif dan Akupresur Terhadap Dismenore Pada Mahasiswi FKP Universitas Riau. Heal Care J Kesehat. 2021;10(1):104–14.
12. Sembiring JB, Kadir D, Tarigan R. Healthy Tadulako Journal (Jurnal Kesehatan Tadulako) Efektivifas Terapi Kombinasi Pemberian Seduhan Kembang Telang / Butterfly Pea (Clittoria Ternatea) Dan Lamaze Exercise Terhadap Penurunan Nyeri Haid (Dismenoroe) Pada Remaja

Putri Institut Kesehat. 2022;8(1):44–51.

13. Arnida AP, Yulia S, Rivan Firdaus. Pemberian Air Jahe Terhadap Nyeri Dismenore Primer Pada Siswi SMA Negeri 5. 2021;6(1):45–50.

14. Ramli N, Santy P. Efektifitas Pemberian Ramuan Jahe (Zingibers officinale) dan Teh Rosella (Hibiscus sabdariffa) terhadap Perubahan Intensitas Nyeri Haid. AcTion Aceh Nutr J. 2017;2(1):61.