

**DECREASE OF DISMENOIRE SCALE SCREENING WITH GINGER
HERBAL THERAPY AND YELLOW ACID IN FEMALE STUDENT
MUHAMMADIYAH VOCATIONAL SCHOOL 2 KLATEN UTARA**

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Background: Dysmenorrhea is pain during menstruation until there is a result of pain that can interfere with daily activities and make women uncomfortable in the lower abdomen accompanied by cramps, nausea, dizziness, and fainting. Dysmenorrhea can be treated using therapeutic ginger and turmeric acid.

Objective: To determine the decrease in the score of dysmenorrhea scale with the therapy of ginger and sour turmeric on the students of North Klaten Muhammadiyah 2 Vocational School.

Research Methods: This study used a quasy experiment design with a non randomized control group pretest posttest design. The sampling technique used purposive sampling with 30 respondents. The instrument used was the Numeric Rating Scale questionnaire. The data analysis used was the Wilcoxon test.

Research Results: The average decrease in the dysmenorrhea scale score in the control group was 6.25 and the trial group was 7 with the control group p-value 0.029 and the trial group 0.002 ($p < 0.005$).

Conclusion: Herbal turmeric acid therapy is more effective in reducing dysmenorrhea scale score in Klaten North Muhammadiyah 2 Vocational School 2 students compared to ginger herbal therapy.

Keywords: Dysmenorrhea, Ginger, Turmeric Acid



PRELIMINARY

As the peak of maturity, women begin to experience the first uterine bleeding called menstruation. The first menstruation occurs at the age of 12-13 years (Manuaba, 2009: 54). According to Abrahams (2014: 24) menstrual disorders are a common cause of women coming to see a general practitioner. Anurogo and Wulandari (2011: 32) state that the most common menstrual disorder in women is menstrual pain (dysmenorrhea). Manuaba (1999: 57) explains that dysmenorrhea is a feeling of pain during menstruation. Feelings of pain during menstruation in the form of mild cramps in the pubic part so that interference occurs in daily tasks. Dysmenorrhea is divided into 2 types, namely: primary dysmenorrhea is dysmenorrhea without genital anatomic abnormalities and secondary dysmenorrhea is dysmenorrhea accompanied by genital anatomic abnormalities. Researchers examined primary dysmenorrhea.

Based on a preliminary study conducted by Ramadina et al (2014: 2) in Pekanbaru State Middle School 3, out of 92 female students, 81.52% experienced primary dysmenorrhea with mild and moderate levels of pain. 62.19% of students who experience primary dysmenorrhea say they have difficulty concentrating while studying and feel lazy, uncomfortable, and have difficulty doing activities. As many as 61.95% of students said that they were left alone, and as many as 18, 47% of female students used pharmacological therapies such as using analgesics that were easily obtained in stalls or pharmacies.

Manuaba (2001: 520) explains that the mechanism of primary dysmenorrhea is in the luteal phase of the menstrual cycle and increases the production of prostaglandins (alpha PGF₂) in the blood, which stimulates contraction of the myometrium resulting in dysmenorrhea. Treatment of dysmenorrhea is divided into 2, namely pharmacological treatment and non-pharmacological. Varney (2006: 341) states that pharmacological treatment using NSAIDs (Non-Steroid Anti-Inflammatory Drugs) such as ibuprofen, diclofenac, mefenamic acid, and naproxen should be performed on the first day of symptoms of dysmenorrhea until 2-3 days later.

Non-pharmacological treatments for treating dysmenorrhea that can be performed by nurses include warm compresses and aromatherapy, hand-held relaxation techniques and deep breath, acupressure, and herbal therapies (cinnamon, soybeans, cloves, ginger and turmeric).

Utami (2005: 65) explains that the chemical content of red ginger includes: essential oils, oleoresin, gingerol, 1,8-cineole, 10-dehydrogingerdione, 6-gingerdione, arginine, and starch elements. Ozgoli, et al (2009: 1) also stated that the chemical content of gingerol in red ginger was able to block the work of prostaglandins so that it can reduce pain during menstruation (dysmenorrhea).

Heinrich, et al (2010: 300) mentions the chemical content of turmeric consists of three important groups, namely curcuminoid, essential oils, and polysaccharides. The chemical content of curcumin in turmeric functions as a cyclooxygenase inhibitor so that it can reduce the occurrence of inflammation during uterine contractions. According to Pauly (1999: 3) Java acid has the chemical content of xylose, xylogycans, and anthocyanins, tannins, saponins, sesquiterpenes, alkaloids, and phlobatamins, and anthocyanins. According to Heinrich, et al (2010: 300) and Nair, et al (2012: 36) the chemical content of curcumine in turmeric and anthocyanins in tamarind acid works in inhibiting cyclooxygenase or synthesis of prostaglandins so that it can reduce inflammation during uterine contractions that can cause dysmenorrhea primary.

The role of nurses in non-pharmacological medicine, namely as counselors and health educators (Crips and Taylor, 2001) in Widyatuti (2008: 56), researchers (Snyder and Lindquis, 2002), coordinators and advocates (Smith et al, 2004), Potter and Perry (2009: 16) states that the role of nurses in non-pharmacological medicine is as a direct service provider.

Based on a preliminary study conducted by researchers on 26 January 2016 at Muhammadiyah 2 Vocational School in North Klaten through interviews with 5 people who obtained data that, 1 student overcame dysmenorrhea by going to bed and feeling less pain after 5 hours to 2 days during menstruation, 1 female student let the pain without action and feel the pain diminish for about 30 minutes but a few moments the pain reappears, 1 student overcomes the pain with a warm drink and feels the pain decreases after 3-4 hours, 1 student overcomes pain by taking mefenamic acid medication feeling the pain decreases after 15-30 minutes, and 1 student overcomes dysmenorrhea by drinking herbal turmeric and feeling the pain diminish after 2 hours.

Based on the description above, the researcher was interested in examining the decrease in the score of the dysmenorrhea scale with the therapy of ginger and sour turmeric in the student of North Muhammadiyah 2 Vocational School (SMK) in Klaten.

RESEARCH METHODS

This type of research is experimental. The research design used was Quasy Experiment design with non randomized control group pretest-posttest design. Variable because it drinks instant ginger and turmeric acid powder. Variables due to a decrease in dysmenorrhea scale score.

This research was conducted in April and May 2019 throughout the daily lives of the respondents. The sample in this study were 30 respondents with purposive sampling.

RESEARCH RESULT

In this study using a sample of 30 respondents, consisting of 15 respondents in the control group were given instant ginger powder drinks, and 15 group respondents tried to be given instant turmeric acid powder drinks.

Univariat Analysis

1. Scores of dysmenorrhea scales before being given an instant ginger powder drink

Table 1. Frequency distribution of dysmenorrhea scale scores before being given instant ginger powder drinks

Score	Month 1			Month 2		
	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)
0	0 (0)	6 (40)	13 (86,7)	0 (0)	8 (53,3)	15 (100)
1	0 (0)	2 (13,3)	0 (0)	0 (0)	0 (0)	0 (0)
2	0 (0)	3 (20)	0 (0)	1 (6,7)	5 (33,3)	0 (0)
3	5 (33,3)	0 (0)	2 (13,3)	5 (33,3)	1 (6,7)	0 (0)
4	2 (13,3)	2 (13,3)	0 (0)	1 (6,7)	1 (6,7)	0 (0)
5	4 (26,7)	1 (6,7)	0 (0)	3 (20)	0 (0)	0 (0)
6	3 (20)	0 (0)	0 (0)	3 (20)	0 (0)	0 (0)
7	1 (6,7)	1 (6,7)	0 (0)	1 (6,7)	0 (0)	0 (0)
8	0 (0)	0 (0)	0 (0)	1 (6,7)	0 (0)	0 (0)
9	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
10	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)

Source: Primary Data 2019

Based on table 1, it can be seen that most respondents (33.3%) in the first and second months of the first day experienced dysmenorrhea with a score of 3. On the second and third days most respondents did not experience dysmenorrhea with a score of 0, which was 40% and 86, 7% in the first month, 53.3% and 100% in the second month.

2. Scales of dysmenrhea score after being given instant ginger powder drink

Table 2. Frequency distribution of dysmenorrhea scale scores after being given instant ginger powder drinks

Score	Month 1			Month 2		
	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)
0	8 (53,3)	11 (73,3)	15 (100)	7 (46,7)	13 (86,7)	15 (100)
1	6 (40)	4 (26,7)	0 (0)	6 (40)	2 (13,3)	0 (0)
2	1 (6,7)	0 (0)	0 (0)	1 (6,7)	0 (0)	0 (0)
3	0 (0)	0 (0)	0 (0)	1 (6,7)	0 (0)	0 (0)
4	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
5	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
6	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
7	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
8	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
9	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
10	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)

Source: Primary Data 2019

Table 2 explains that the first month, on the first and second days, most respondents (53.3%) and (73.3%) did not experience dysmenorrhea with a score of 0 after being given instant ginger powder drinks.. It can be seen also in the second month, the first day and the second day most respondents (46.7%) and (86.7%) did not experience dysmenorrhea with a score of 0 , and on the third day all respondents (100%) did not experience dysmenorrhea with a score of 0.

3. Scores of dysmenorrhea scales before being given instant turmeric acid powder drinks

Table 3. Frequency distribution of dysmenorrhea scale scores before being given instant turmeric acid powder drinks

Score	Month 1			Month 2		
	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)
0	0 (0)	5 (33,3)	11 (73,3)	0 (0)	3 (20)	14 (93,3)
1	0 (0)	0 (0)	2 (13,3)	0 (0)	1 (6,7)	0 (0)
2	1 (6,7)	1 (6,7)	1 (6,7)	0 (0)	1 (6,7)	0 (0)
3	2 (13,3)	0 (0)	0 (0)	2 (13,3)	5 (33,3)	1 (6,7)
4	1 (6,7)	4 (26,7)	1 (6,7)	4 (26,7)	3 (20)	0 (0)
5	3 (20)	3 (20)	0 (0)	1 (6,7)	1 (6,7)	0 (0)
6	2 (13,3)	2 (13,3)	0 (0)	3 (20)	1 (6,7)	0 (0)
7	1 (6,7)	0 (0)	0 (0)	2 (13,3)	0 (0)	0 (0)
8	4 (26,7)	0 (0)	0 (0)	2 (13,3)	0 (0)	0 (0)
9	1 (6,7)	0 (0)	0 (0)	1 (6,7)	0 (0)	0 (0)
10	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)

Source: Primary Data 2019

Based on table 3, most respondents (26.7%) experienced dysmenorrhea with a score of 8 in the first month on the first day before being given instant turmeric acid powder drinks. On the second and third day the respondents did not experience dysmenorrhea, meaning the score of respondents' dysmenorrhea scale was 0 with a percentage of 33.3% on the second day and 73.3% on the third day. Whereas in the second month on the first day most respondents (26.7%) experienced dysmenorrhea with a score of 4, on the second day the most dysmenorrhea occurred in score 3 which was 33.3%, and on the third day most of the respondents (93.3 %) did not experience dysmenorrhea with a score of 0.

4. Scales of dysmenorrhea score after being given an instant turmeric acid powder drink

Table 4. Scales of dysmenorrhea score after being given an instant turmeric acid powder drink

Score	Month 1			Month 2		
	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)	Day 1 n (%)	Day 2 n (%)	Day 3 n (%)
0	3 (20)	6 (40)	14 (93,3)	6 (40)	11 (73,3)	15 (100)
1	4 (26,7)	7 (46,7)	1 (6,7)	5 (33,3)	4 (26,7)	0 (0)
2	6 (40)	2 (13,3)	0 (0)	4 (26,7)	0 (0)	0 (0)
3	2 (13,3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
4	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
5	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
6	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
7	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
8	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
9	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
10	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)	15 (100)

Source: Primary Data 2019

Table 4 explains that in the first month on the first day, the majority of respondents (40%) experienced dysmenorrhea with a score of 2 after being given an instant turmeric acid powder drink. On the second day most of the respondents (46.7%) experienced dysmenorrhea with a score of 1 and on the third day most respondents (93.3) did not experience dysmenorrhea with a score of 0. While in the second month, on the first and second day most respondents (40%) and (73.3%) did not experience dysmenorrhea with a score of 0, and on the third day all respondents (100%) did not experience dysmenorrhea with a score of 0.

Bivariate Analysis

Bivariate analysis was carried out to consider the direction of difference and to consider the relative large differences (differences in dysmenorrhea scale scores between the control and trial groups) using the Wilcoxon test.

Table 5. The difference in the decrease in dysmenorrhea scale scores after intervention in the control group and try

Group	N	Mean Rank	<i>p-value</i>
Control	15	6,25	0,029
Try	15	7	0,002

Source: Primary Data 2019

Based on the results of the Wilcoxon test in table 5 in the control and trial groups obtained *p-value* of 0.029 in the control group and 0.002 in the trial group ($p < 0.05$) indicating that there is a difference between the administration of instant ginger powder drinks and sour turmeric instant powder drinks to decrease in dysmenorrhea scale score where the average decrease in dysmenorrhea scale score in the control group was 6.25 while in the trial group 7.

DISCUSSION

1. Scores of dysmenorrhea scales before being given an instant ginger powder drink

Based on table 1 the scale score of dysmenorrhea before being given instant ginger powder drinks, most respondents experienced dysmenorrhea with a score of 3 both in the first month and the second month with a percentage of 33.3%.

Rayburn (2001: 311) states that dysmenorrhea occurs because of the excess prostaglandin $F2\alpha$ by the endometrium, causing stimulation of smooth muscles, and not due to organic causes. Also explained by Smeltzer (2001: 1510), dysmenorrhea occurs in the luteal phase which occurs on days 15-25 where there is an increase in the production of prostaglandins which cause pain during menstruation. The researchers argue that dysmenorrhea experienced by respondents is caused by an increase in prostaglandin $F2\alpha$ by the endometrium which occurs in the luteal phase of the menstrual cycle that occurs on day 15-25 which causes stimulation of smooth muscles.

2. Scales of dysmenorrhea score after being given instant ginger powder drink

Table 2 explains that most respondents in the first and second months experienced a decrease in menstrual pain (dysmenorrhea) with a score of 0 with a percentage of 53.3% in the first month of the first day, 73.3% the second day, 100% on the third day, and on the month second with the percentage of 46.7% on the first day, 86.7% on the second day, and 100% on the third day.



Red ginger contains substances that can stop the work of prostaglandin which causes pain and inflammation of blood vessels, so that the pain experienced by respondents due to menstruation becomes lighter after drinking red ginger. He also explained that some components contained 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. That is, ginger contains substances that have the effect of relieving pain and nausea during menstruation (Arfiana: 2014: 7).

According to Ozgoli (2009: 1) ginger is as effective as mefenamic acid and ibuprofen in relieving dysmenorrhea pain, other further studies regarding the effects of ginger related to dysmenorrhea, efficacy (effectiveness) and safety of various doses and duration of treatment for ginger are guaranteed. Deglin (2004: 556) explained that pain assessment was carried out 1-2 hours after administration of ibuprofen.

This is in accordance with the research conducted by Tanjung (2014: 1) that there is a significant effect of ginger extract therapy in reducing primary dysmenorrhea with an average value of 4,771 with p -value = 0,000. This is reinforced by Herlinadiyaningsih (2016: 6) that there is a decrease in the value of the average pain intensity in respondents before and after being given an intervention in the form of ginger which is equal to 3.0.

In the opinion of the researcher, there was a decrease in the scale score of dysmenorrhea after being given an instant ginger powder drink because ginger contains the active compounds of gingerol, shogaol, and zingerone which have an anti-inflammatory and analgesic pharmacological effect that can reduce menstrual pain.

3. Scores of dysmenorrhea scales before being given instant turmeric acid powder drinks

Based on table 3 in the first month of the first day respondents were 4 with a percentage of 26.7% having dysmenorrhea with a score of 8, on the second and third days most respondents did not experience dysmenorrhea with a score of 0 as many as 5 respondents (33.3%) and 11 respondents (73.3%). In the second month on the first day most of the respondents as many as 4 respondents with a percentage of 26.7% had dysmenorrhea with a score of 4, on the second day most dysmenorrhea occurred in score 3 namely 5 respondents (33.3%) and on the third day most respondents ie 11 (93.3%) respondents did not experience dysmenorrhea with a score of 0.

Hillard (2006: 66) explains that menstrual pain occurs due to the release of prostaglandin (PG) F_{2α}, which is a cycle of Cyclooxygenase (COX) which can cause hypertonus and vasoconstriction in the myometrium so that ischemia occurs. And also there is a clear PGE-2 that will increase pain during menstruation. According to Manuaba (2001: 518) dysmenorrhea can be accompanied by headaches, kemeng hip, diarrhea and feeling depressed. According to researchers, pain felt by each individual is different because pain is a subjective feeling that can only be felt by the individual itself.

4. Scales of dysmenorrhea score after being given an instant turmeric acid powder drink

Table 4 explains that after being given instant turmeric acid powder drinks in the first month on the first day 6 respondents (40%) had dysmenorrhea with a score of 2, on the second day 1 dysmenorrhea score was 7 respondents (46.7%), on the third day the dysmenorrhea score 0 as many as 14 respondents (93.3%). Whereas in the second month on the first day 6 respondents (40%), on the second day 11 respondents (73.3%), and on the third day 15 respondents (100%) did not experience dysmenorrhea with a score of 0.

Turmeric contains curcumin compounds (94%) and essential oils (5.8%) which function as analgesics to relieve pain (Sari, 2012: 7). Pauly (1999: 3) also explained that tamarind has a chemical content of anthocyanins which is useful as an antipyretic and anti-inflammatory.

The fruit of turmeric and sour fruit rhizome which is then processed into sour turmeric drinks, that the combination of the two components contains various natural active ingredients that can reduce the activity of the enzyme Cyclooxygenase (COX) so that it can reduce inflammatory reactions, reduce prostaglandin release during menstruation, suppress autonomic nervous system activity thus suppressing excessive uterine contraction and vasospasm, and reducing emotional stress that works through the autonomic nervous system (Anindita, 2010: 52).

The results of the research conducted by Sari (2012: 6) using the t-test on the respondents obtained $p = 0,000$ ($\alpha < 0,05$) which means, there is an influence of the administration of turmeric acid with the incidence of dysmenorrhea in adolescent girls in Dagen Pendowohardjo hamlet Sewon Bantul. In line with the research conducted by Suciani, et al (2014: 7) that there were significant differences between the average pain intensity of dysmenorrhea in the experimental group and the control group after administration of sour turmeric stew.

In the opinion of researchers, the content of sour turmeric which plays an important role in reducing menstrual pain (dysmenorrhea) is curcumine and anthocyanins which have pharmacological effects as analgesic and anti-inflammatory so individuals who consume sour turmeric drinks during menstruation have complaints of dysmenorrhea lighter than those who do not consume.

5. Differences in the decrease in dysmenorrhea scale scores after intervention in the control group and trial group

Based on the results of the Wilcoxon test in the control group and try to get p-value 0.029 in the control group and 0.002 in the experimental group showed that there is a difference between the administration of instant ginger powder drinks and instant turmeric acid powder drinks against a decrease in dysmenorrhea dysmenorrhea scale score.

The difference in the average change in the score of dysmenorrhea scale for the try group (drinks of sour turmeric instant powder) is greater that is 7 than the control group (instant ginger powder drink) of 6.25 which means that instant turmeric acid powder drinks can more effectively reduce the dysmenorrhea scale score when compared with instant ginger powder drink.

Ginger can reduce menstrual pain (dysmenorrhea) because it contains important compounds, such as gingerol, shogaol, and zingerone which have pharmacological effects as anti-inflammatory and analgesic. This is in accordance with the research conducted by Ozgoli (2009: 1) that ginger is as effective as mefenamic acid and ibuprofen drugs that can relieve pain in dysmenorrhea. This is in line with research conducted by Rahnama (2012: 1) that ginger can reduce pain intensity and duration of menstrual pain (primary dysmenorrhea). Strengthened by research conducted by Arfiana (2014: 7) red ginger has a chemical component of gingerol, shogaol, and zingerone which has a pharmacological effect as an analgesic and anti-inflammatory. The chemical components of ginger can stop the work of prostaglandin which causes pain and inflammation of blood vessels, so that the pain experienced by respondents due to menstruation becomes lighter after drinking red ginger.

Turmeric acid has a chemical content of curcumine and anthocyanins which can reduce menstrual pain. Acidic turmeric drinks are easily processed and ingredients are easily obtained. Saffron tamarind drink is an Indonesian traditional drink that is often used to, eliminate body odor, lose weight and reduce menstrual pain. This is in line with the research conducted by Safitri (2014: 5) that sour turmeric drinks have basic properties as analgesic and anti-inflammatory. Turmeric active agent which functions as anti-inflammatory and antipyretic is curcumine, while as analgesic is curcumenol.

Tamarind fruit, has natural anthocyanin active agents as anti-inflammatory and antipyretic. In addition, tamarind fruit also contains tannins, saponins, sesquiterpenes, alkaloids, and phlobotamins to reduce nervous system activity. The rhizome of turmeric and sour fruit which is then processed into an acidic turmeric drink, the combination of the two components contains various natural active ingredients that can reduce the activity of the enzyme cyclooxygenase (COX) so it can reduce inflammatory reactions, reduce the release of prostaglandins during menstruation, suppress the autonomic nervous system activity excessive uterine contraction and vasospasm, and reduce emotional stress that works through the autonomic nervous system.

In line with the research conducted by Anindita (2010: 48) that there is an effect of consuming turmeric drinks on complaints of primary dysmenorrhea in adolescent girls in Surakarta Municipality indicated by the calculation of Odds Ratio which is equal to 0.0306 which means women who have a habit of consuming drinks Acidic turmeric has a 33 times lower chance of primary dysmenorrhea than girls who do not have the habit of consuming sour turmeric drinks. In the opinion of researchers, drinking instant ginger powder and sour turmeric can reduce the scale score of dysmenorrhea. This is because there is a chemical content of gingerol in red ginger and acidic curcumin and anthocyanin which can stop the work of prostaglandin which causes pain and inflammation of blood vessels and relieves cramps.

Acidic turmeric herbal therapy is more effective than ginger herbal therapy because it has a higher antioxidant activity in sour turmeric. According to Sejati (2002) in Astawan (2009: 88) states that the antioxidant activity of Javanese turmeric-acid combination drinks is better than Javanese sour drinks only. Wijayanti et al (2016: 164) also explained that curcumin in turmeric is a phenolic compound (free radical scavenger essential compound) that has the ability as an antioxidant. The antioxidant activity produced tends to increase with the increasing amount of acidic Java concentration added. The combination of spices and sour fruit can increase the resistance of antioxidant β -carotene during heating. Addition of tamarind is able to maintain the stability of antioxidants contained in turmeric. Antioxidants can stabilize hormones in the body, so that menstrual pain (dysmenorrhea) will not be felt again.



CONCLUSION

Based on the results of research conducted at the Muhammadiyah 2 Vocational School (SMK) North Klaten in 2019 the following conclusions can be taken:

1. Scores of dysmenorrhea scale before being given ginger instant powder drinks in the first and second months on the first day most respondents experienced dysmenorrhea with a score of 3, on the second and third days of score 0. Scales of dysmenorrhea after being given ginger instant powder drinks in the first and second months on the first day to day the three respondents did not experience dysmenorrhea with a score of 0.
2. Scales of dysmenorrhea score before being given instant drink of tamarind acid powder in the first month on the first day most respondents experienced dysmenorrhea with a score of 8, on the second and third day the respondents did not experience dysmenorrhea with a score of 0. In the second month on the first day, most respondents having dysmenorrhea with a score of 4, on the second day most respondents experienced dysmenorrhea with a score of 3, and on the third day most respondents did not experience dysmenorrhea with a score of 0. Scales of dysmenorrhea after being given an instant turmeric acid powder drink in the first month on the first day of most respondents experiencing dysmenorrhea with a score of 2, on the second day the majority of respondents experienced dysmenorrhea with a score of 1 and on the third day most respondents did not experience dysmenorrhea with a score of 0. In the second month, on the first day to day the three respondents did not experience dysmenorrhea with a score of 0.
3. There is a difference in the decrease in dysmenorrhea scale scores between the therapy of ginger and turmeric acid with differences in the average ginger of 6.25 and 7 turmeric with p-value of 0.029 ginger and sour turmeric 0.002 ($p < 0.005$). This shows that herbal turmeric acid therapy is more effective in reducing dysmenorrhea scale scores in Klaten North Muhammadiyah 2 Vocational School 2 students compared to ginger herbal therapy.

SUGGESTION

Based on the conclusions obtained from the results of the study, there are several suggestions that the researcher can convey, namely:

1. Institutional Education
Institutions are expected to provide information on non-pharmacological treatment of therapeutic ginger and turmeric acid as a non-pharmacological treatment in reducing menstrual pain (dysmenorrhea), so as to reduce the use of drugs.

2. For Nursing Professionals

The nursing profession is expected to be able to apply ginger and turmeric acid therapy in providing comprehensive and holistic nursing care to women who experience dysmenorrhea. Nurses can act as counselors, health educators, researchers, coordinators, advocates, and service providers directly by creating health clinics, so that they can provide therapeutic interventions for ginger and turmeric herbal medicine to women.

3. For Research Sites

The Muhammadiyah 2 Vocational School of Klaten Utara is expected to be able to provide information on non-pharmacological treatment of therapeutic ginger and sour turmeric on students who experience dysmenorrhea.

4. For Respondents

Respondents are expected to be able to apply non-pharmacological treatment of ginger and turmeric acid therapy to reduce dysmenorrhea, which is a safe treatment with minimal cost, time and side effects.

5. For Further Researchers

The next researcher is expected to be able to carry out similar research using a larger sample with a quasy experiment design design, non randomized control group. It is necessary to do research on other non-pharmacological therapies that can be used to treat dysmenorrhea in women, for example by using warm compresses, aromatherapy, finger-held relaxation and deep breathing, acupressure, the use of non-steroidal anti-inflammatory drugs when using ginger herbal therapy. and sour turmeric. Determination tests and toxicity tests in the laboratory are needed to determine the correctness of the materials used in the study. Do research with different days and times.

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