



DIFFERENCES IN THE EFFECTIVENESS OF TAMARIND TURMERIC HERBAL DRINK AND WARM COMPRESSES ON PRIMARY DYSMENORRHEA PAIN INTENSITY IN ADOLESCENT WOMEN

Tutik Hidayati, Iis Hanifah

Hafshawaty Universitas, Probolinggo - Indonesia

Email: afithuafda2702@gmail.com

| ABSTRACT | Keywords |
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| Dysmenorrhea, or pain during menstruation, can significantly disrupt a woman's daily life. This pain often affects the activities of young women. In Indonesia, it is widely believed that consuming tamarind turmeric herbal drinks and using warm compresses can help alleviate the pain associated with primary dysmenorrhea. This study aimed to compare the effectiveness of tamarind turmeric herbal drinks and warm compresses in reducing the intensity of primary dysmenorrhea pain in adolescent girls. The study included 52 female students from Probolinggo Unggulan Senior High School who had a history of dysmenorrhea, with a sample size of 42 students who experienced menstruation in April–May 2023 and met the inclusion criteria. The research utilized a quasi-experimental analytical approach and a probability sampling technique. The results of the t-test showed significant differences in the effectiveness of tamarind turmeric herbal drinks and warm compresses on the intensity of primary dysmenorrhea pain in young women. Based on these findings, it is recommended that warm compresses be used as the primary alternative for treating primary dysmenorrhea pain in order to minimize disruption to daily activities. | Teenage girl, Primary dysmenorrhea, Tamarind tumeric herbal drink, Warm compresses |

INTRODUCTION

Dysmenorrhea is a condition related to menstruation characterized by short-term pain before or during menstruation. The pain typically occurs in the lower abdomen but can also radiate to the lower back and thighs. Additionally, severe stomach cramps may accompany the pain. These cramps result from contractions in the uterus, which are a normal part of the menstrual process. They are usually felt when bleeding starts and can last for up to 32-48 hours (McKenna & Fogleman, 2021).

In Indonesia, the prevalence of primary dysmenorrhea (54,89%) and secondary dysmenorrhea (9,36%) (Arisani et al., 2022). Menstruation is a natural

occurrence for women, but the reality is that almost 70-80% of women worldwide experience menstrual pain (dysmenorrhea) (Husnul, 2019). Currently, many dysmenorrhoea sufferers actually really need serious attention so that the existing symptoms can be treated immediately and treatment can be given as soon as possible. If dysmenorrhea is left untreated without proper management, it will have a far-reaching impact on women's quality of life (Bernardi et al., 2017). Dysmenorrhea that occurs every month causes many absences from work or school, so this condition can reduce learning achievement at school (Ristiani et al., 2023).

Dysmenorrhea pain, if not treated immediately, will affect the individual's

mental and physical function, making it urgent to take immediate pharmacological or non-pharmacological action or therapy (Bavil et al., 2016). One of the pharmacological therapies is giving analgesic drugs (Purnama Sari et al., 2018). Women with dysmenorrhea are more likely to use pharmacological therapy to reduce pain. NSAIDs (nonsteroidal anti-inflammatory drugs) can relieve this pain by blocking prostaglandins, which cause pain. Using NSAIDs has harmful side effects on other body systems, such as stomach pain and kidney damage (Anggraini et al., 2022; Gunaydin & Bilge, 2018).

Therefore, non-pharmacological treatment or complementary therapy which has minimal side effects is needed. The first alternative way is to consume herbal products or phytopharmaceuticals (Wuisang et al., 2022).

Previous research shows that the curcumin content in turmeric is safe for human consumption and does not cause poisoning. The recommended safe daily amount of curcumin for humans is 100 mg (Peng & Qian, 2014; Soleimani et al., 2018). Apart from that, tamarind fruit contains tannins, saponins, sesquiterpenes, alkaloids and phlobatnin which can reduce nervous system activity. One popular herbal product known for its pain-relieving properties is turmeric tamarind.

The second alternative method involves using a warm compress. Non-pharmacologically, warm compresses are highly effective in reducing dysmenorrhea pain by relaxing muscles and reducing uterine ischemia, leading to a reduction or disappearance of pain. Both non-pharmacological treatments and alternative methods have their own advantages (Rosyada Amalia et al., 2020). However, the effectiveness of these two methods in treating primary dysmenorrhea has not yet been determined (Permadi et al., 2020; Rosyada Amalia et al., 2020).

Based on these problems, the researchers chose tamarind turmeric herbal drink, which is considered effective in relieving pain associated with primary dysmenorrhea, and a warm compress, which is also believed to be able to reduce this pain.

In addition, researchers are interested in comparing the effectiveness of tamarind turmeric herbal drink and warm compresses in reducing the intensity of primary dysmenorrhea pain in adolescent girls at Hafshawaty Probolinggo High School.

METHOD

The design used in this research is an analytical quasi-experimental design with a non-equivalent control group design. In this study, researchers used three groups, namely two experimental groups and one control group.

In experimental group I, participants will receive tamarind turmeric herbal drink in the form of extract per sachet with a composition of 35g of turmeric and 10g of tamarind. In experimental group II, participants will receive a warm compress with a temperature of 37-40 °C. The control group will not receive any treatment.

Initial observations (pretest) were conducted to assess the intensity of dysmenorrhea pain before treatment in experimental group I and II. After the pretest, treatment was administered to both experimental groups. Final observations (posttest) were then conducted after treatment in experimental group I and II.

This study compared the average posttest scores in experimental group I, experimental group II, and control group to assess the differences in the effect of giving tamarind turmeric herbal drink and warm compresses on the intensity of primary dysmenorrhea pain in adolescent girls.

The study population consisted of all female students at Probolinggo Senior High School, total 52 individuals. The sample for the study included 42 female students who experienced menstruation in April to May 2023 and met the inclusion criteria. Of the sample, 14 were assigned to experimental group I, 14 to experimental group II, and 14 to the control group. Probability Sampling was used as the sampling technique. Data was collected using observation sheet instruments and the Numeric Rating Scale (NRS) pain scale. The data will be analyzed using SPSS and an Independent T Test will be conducted for analysis (ZA Nuzul, 2019).

RESULTS

Analysis of research data used the paired T-test, which is commonly used to measure observations before and after treatment. The test results on the effectiveness of giving tamarind turmeric herbal drink and warm compresses on the intensity of primary dysmenorrhea pain in young women can be presented in tabular form.

Table 1. Frequency distribution of respondents based on age level.

| Respondent' Age | F | % |
|-----------------|-----------|------------|
| < 15 yr | 0 | 0 |
| 15-20 yr | 42 | 100 |
| >20 yr | 0 | 0 |
| Total | 14 | 100 |

Based on the table above, data was obtained for all respondents aged 15-20 years, totaling 42 people (100%).

Table 2. Frequency distribution of respondents based on length of menstruation.

Table 4. Frequency Distribution of Primary Dysmenorrhea Pain in Adolescent Girls Before and

| Tamarind turmeric herbal drink | Pain Level | | | | |
|--------------------------------|-----------------|-----------------|---------------------|-------------------|----------------|
| | Not painful (0) | Mild Pain (1-3) | Moderate Pain (4-6) | Severe Pain (7-9) | Most Pain (10) |
| | F (%) | F (%) | F (%) | F (%) | F (%) |
| | 0 | 1 (14,3) | 7 (50) | 5 (35,7) | 0 |
| | 1 (7,1) | 4 (28,6) | 9 (64,3) | 0 | 0 |
| | P value 0,001 | | | | |

Based on the table above, it was found that among young women with primary dysmenorrhea, 14.3% experienced mild pain before being given tamarind turmeric herbal drink, which increased to 28.6% after consuming the drink. In the moderate pain category, 50% of respondents

Table 5. Frequency Distribution of Primary Dysmenorrhea Pain in Adolescent Girls Before and After Giving Warm Compresses

| Warm Compresses | Pain Level | | | | |
|-----------------|-----------------|-----------------|---------------------|-------------------|----------------|
| | Not painful (0) | Mild Pain (1-3) | Moderate Pain (4-6) | Severe Pain (7-9) | Most Pain (10) |
| | F (%) | F (%) | F (%) | F (%) | F (%) |
| | 0 | 1 (7,1) | 8 (57,2) | 5 (35,7) | 0 |
| | 2 (14,3) | 6 (42,8) | 6 (42,8) | 0 | 0 |
| | P value 0,000 | | | | |

| Length of menstruation | F | % |
|------------------------|-----------|------------|
| < 7 dys | 17 | 40,5 |
| 7-10 dys | 25 | 59,5 |
| >10 dys | 0 | 0 |
| Total | 42 | 100 |

Based on the table above, the majority of respondents had a menstrual period of 7-10 days, namely 25 people (59.5%).

Table 3. Frequency distribution of respondents based on menstrual cycle.

| Menstrual cycle | F | % |
|-----------------|-----------|------------|
| < 28 dys | 7 | 16,7 |
| 28-30ys | 22 | 52,4 |
| > 30 dys | 13 | 30,9 |
| Total | 42 | 100 |

Based on the table above, data is obtained that the majority of respondents with a menstrual cycle of 28-30 days are 22 people (52.4%)

After Giving Turmeric Tamarind Herbal Drinks

| | | | | | |
|--------|---------------|----------|----------|----------|---|
| Before | 0 | 2 (14,3) | 7 (50) | 5 (35,7) | 0 |
| After | 1 (7,1) | 4 (28,6) | 9 (64,3) | 0 | 0 |
| | P value 0,001 | | | | |

experienced pain before consuming the drink, which increased to 64.3% after consumption. In the severe pain category, 35.7% of respondents experienced pain before consuming the drink, and there were no respondents in this category after consuming the drink.

| | F (%) | F (%) | F (%) | F (%) | F (%) |
|--------|---------------|----------|----------|----------|-------|
| Before | 0 | 1 (7,1) | 8 (57,2) | 5 (35,7) | 0 |
| After | 2 (14,3) | 6 (42,8) | 6 (42,8) | 0 | 0 |
| | P value 0,000 | | | | |

Based on the table above, it was found that among young women with primary dysmenorrhea, 7.1% experienced mild pain before using a warm compress, which increased to 42.8% after using a warm compress. In the moderate pain category, 57.2% experienced pain before using a

warm compress, which decreased to 42.8% after using a warm compress. In the severe pain category, 35.7% experienced pain before using a warm compress, and no respondents experienced severe pain after using a warm compress.

Table 6. Frequency Distribution of Primary Dysmenorrhea Pain in the Control Group on Day 1 and Day 2

| Control group | Pain Level | | | | |
|---------------|-----------------|-----------------|---------------------|-------------------|----------------|
| | Not painful (0) | Mild Pain (1-3) | Moderate Pain (4-6) | Severe Pain (7-9) | Most Pain (10) |
| Day 1 | 0 | 2 (14.3%) | 9 (64.3%) | 3 (21.4%) | 0 |
| Day 2 | 1 (7.1%) | 6 (42.8%) | 5 (35.7%) | 2 (14.3%) | 0 |
| P value 0,002 | | | | | |

| | F (%) | F (%) | F (%) | F (%) | F (%) |
|---------------|---------|----------|----------|----------|-------|
| Day 1 | 0 | 2 (14,3) | 9 (64,3) | 3 (21,4) | 0 |
| Day 2 | 1 (7,1) | 6 (42,8) | 5 (35,7) | 2 (14,3) | 0 |
| P value 0,002 | | | | | |

According to table 6, the study found that in the control group, the number of respondents experiencing mild pain on day 1 was 2 (14.3%), which increased to 6 (42.8%) on day 2. For respondents experiencing moderate pain, there were 9 (64.3%) on day 1 and 5 (35.7%) on day 2. In the severe pain category, there were 3 respondents (21.4%) on day 1 and 2 (14.3%) on day 2.

pain category, 9 respondents in the moderate pain category, and 3 respondents in the severe pain category.

The T-test results showed a p-value of $0.001 < \alpha (0.05)$ in experimental group I, $0.000 < \alpha (0.05)$ in experimental group II, and $0.002 < \alpha (0.05)$ in the control group. Therefore, the conclusion from table H₁ is accepted, indicating a difference in the effectiveness of tamarind turmeric herbal drink and warm compresses on the intensity of primary dysmenorrhea pain in young women at Unggulan Senior High School.

The pathophysiology of primary dysmenorrhea is still unclear because there are many factors that influence its occurrence in adolescent girls. However, one theory that is still believed to be true is the prostaglandin and leukotriene theory (Itani et al., 2022).

DISCUSSION

Pain intensity before treatment

Based on frequency distribution data, it was found that primary dysmenorrhea pain in young women before being given tamarind turmeric herbal drink was in the mild pain category with 2 respondents, 7 respondents in the moderate pain category, and 5 respondents in the severe pain category. In the warm compress group: 1 respondent in the mild pain category, 8 respondents in the moderate pain category, and 5 respondents in the severe pain category. On day 1, the control group consisted of 2 respondents in the mild

This is caused by a decrease in the hormone progesterone and estrogen after ovulation but no fertilization occurs, causing menstruation. The prostaglandin and leukotriene cycle in the uterus activated (Natosba, 2020). The inflammatory response due to the prostaglandin cycle in the uterus will result in hypertonus and vasoconstriction in the myometrium. Finally, ischemia and pain arise in primary dysmenorrhea (Marlina, E. 2012). The specific substance that causes this is prostaglandin (PG) F_{2-α}.

Primary dysmenorrhea can also be caused by psychological pressure or stress, which can lead to an increase in catecholamines. This increase results in vasoconstriction and ischemia of uterine cells, leading to an inflammatory process that a trigger factor for primary dysmenorrhea (Naldi Tri. 2017).

Pain intensity after treatment

Data was collected from 14 respondents in experimental group I after consuming tamarind turmeric herbal drink. The results

showed that 1 respondent had no pain (7.1%), 4 respondents had mild pain (28.6%), and 9 respondents had moderate pain (64.3%). There were no respondents with severe pain.

Similarly, data was collected from 14 respondents in experimental group II after using a warm compress. The results showed that 2 respondents had no pain (14.4%), 6 respondents had mild pain (42.8%), and 6 respondents had moderate pain (42.8%). There were no respondents with severe pain in this group as well.

In comparison, data was collected from 14 control group respondents on day 2. The results showed that 1 respondent had no pain (7.1%), 6 respondents had mild pain (42.8%), 5 respondents had moderate pain (35.7%), and 2 respondents had severe pain (14.4%).

According to research by Naldi Tri (2017), giving tamarind turmeric herbal drinks varies depending on the respondent's menstrual cycle. In addition, each respondent received a warm compress for 1 hour, with the provisions being 30 minutes first and 30 minutes second. Pain is subjective, and each person's response to pain is different. Tolerance for pain also varies from person to person. Individuals with high pain tolerance may not complain of pain with small stimuli, while individuals with low pain tolerance may easily feel pain with small painful stimuli. Those with high pain tolerance are able to endure pain without help, while those with low pain tolerance look for ways to prevent pain before it occurs (Gokhale SG1 & Gokhale S2, 2017).

The effectiveness of both treatments in reducing pain intensity.

Based on frequency distribution data, pain reduction score data were obtained before and after the turmeric tamarind herbal drink was given. It is known that out of the 14 respondents, 10 respondents (71.4%) experienced a decrease in primary dysmenorrhoea pain after being given the turmeric tamarind herbal drink, while only 4 respondents (28.6%) had constant pain. It can be concluded that there is a reduction in primary dysmenorrhoea pain after

administering the turmeric tamarind herbal drink.

During menstruation, when there is no fertilization of the ovum after ovulation, female reproductive hormones drop drastically because the corpus luteum involutes. This results in all the conditions of the endometrium that have been previously prepared for implantation resulting from fertilization to be destroyed as well. All glands decay, there is a decrease in nutrition, and vasospasm of blood vessels in the endometrium. Vasospasm will cause an inflammatory reaction which will activate arachidonic acid metabolism and ultimately release prostaglandins (PG). Especially PGF₂-alpha will cause vasoconstriction and hypertonus in the myometrium. Hypertonus is what will cause primary dysmenorrhea (Wulandara, 2023). Tamarind turmeric herbal drink has basic properties as an analgesic and anti-inflammatory. The active agent that functions as an anti-inflammatory and antipyretic is curcumin. Meanwhile, curcumenol is used as an analgesic (Widiatami, 2018).

Tamarind fruit contains the natural active agent anthocyanin, which acts as an anti-inflammatory and antipyretic. Additionally, tamarind fruit also contains tannins, saponins, sesquiterpenes, alkaloids, and phlobotamins, which can reduce nervous system activity (Widiatami, 2018).

The natural ingredients found in tamarind tumeric herbal drinks can also help reduce symptoms of primary dysmenorrhoea. Curcumin and anthocyanins work to inhibit the cyclooxygenase (COX) reaction, thereby reducing inflammation (Utami et al., 2020).

Based on Anindita (2010), turmeric contains natural active substances which function as an analgesic, antipyretic and anti-inflammatory. Meanwhile, tamarind also contains active substances that function as antipyretics and sedatives, thereby reducing psychological stress. As a result, consuming tamarind turmeric herbal drinks can reduce the pain of primary dysmenorrhea in adolescent girls. In the frequency distribution data, it was found that 85.7% of the 14 respondents experienced a decrease in primary dysmenorrhea pain after

being given a warm compress, while only 14.3% experienced persistent pain, meaning that the warm compress was effective in reducing primary dysmenorrhea pain.

Warm water compresses are known to relieve pain by reducing tension, increasing feelings of well-being, and relieving pelvic vasocongestion (Agustin et al., 2022). Warm compresses are a non-pharmacological treatment that is useful in reducing dysmenorrhea pain by relaxing muscles and reducing uterine ischemia which ultimately reduces or eliminates pain (Tianing et al., 2021). In addition, warm compresses can be used to treat pain and relax tense muscles. It is usually done with a rubber bag filled with warm water at a temperature of 37-40 °C, which transfers heat to the stomach, causing blood vessels to dilate and increasing blood flow in the area. This warmth can increase relaxation and psychological comfort, which ultimately reduces the response to pain (Dahlan, 2017).

CONCLUSIONS

There is still minimal education provided by health workers or UKS officers in schools regarding non-pharmacological treatment of dysmenorrhea. Therefore, it is necessary to increase education and prepare several tools and materials needed to treat dysmenorrhea non-pharmacologically.

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