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Effectiveness of Ginger Aromatherapy and Warm Compresses on Menstrual Pain in Adolescents

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Abstract. Menstruation or menstruation is a sign that the reproductive system and organs in women are functioning. Menstruation causes various complaints such as discomfort caused by excessive bleeding during menstruation and complaints of pain known as dysmenorrhoea. Around 55 percent of women of childbearing age in Indonesia suffer from menstrual pain. Non-pharmacological therapies that can treat dysmenorrhoea are warm compresses and ginger aromatherapy. The aim of the research was to determine the effectiveness of ginger aromatherapy and warm compresses on menstrual pain in adolescents. The research design uses a quasi-experimental with control group design. The intervention group was given ginger aromatherapy and warm compresses on the first day of menstruation, while the control group was not given any intervention. Data analysis used the Mann Whitney test. The population in this study were all class IX female students at Sriwijaya Middle School, Palembang. The sampling technique used purposive sampling totaling 30 respondents. The menstrual pain scale uses the Numeric Ratting Scale (NRS). The results of the Mann Whitney test obtained a p value of 0.001, meaning that there was a difference in the pain scale in the intervention group that was given ginger aromatherapy and warm compresses for menstrual pain in teenagers compared to the control group that was not given the intervention. It is recommended that health workers intensify education regarding complementary therapies in reducing menstrual pain in adolescents.

Keywords: aromatherapy, ginger, warm compress, dysmenorrhoea, teenagers.

1. BACKGROUND

Menstruation or menstruation is a sign that the reproductive system and organs in women are functioning. Menstrual blood that flows comes from the endometrium which decays during each cycle (Prawiroharjo, 2014). The average normal menstrual cycle in women is 28 days per month. The maximum period for menstruation is 15 days. As long as the blood that comes out does not exceed this limit, then the blood that comes out is menstrual blood (Kholisotin et al., 2021). Menstruation can cause various complaints and disorders, for example discomfort caused by heavy bleeding during menstruation, and other menstrual disorders. The most common condition is dysmenorrhea or menstrual pain (Kholisotin et al., 2021; Kusumadiyanti et al., 2021).

The World Health Organization (WHO) reports that 1,769,425 people (90%) suffer from dysmenorrhea, 10-15% of whom experience severe menstrual disorders (Indrayani & Antiza, 2021). Around 55 percent of women of childbearing age in Indonesia suffer from menstrual pain. The incidence (prevalence) of menstrual cramps varies from 45% to 95% in women of childbearing age. The incidence of primary dysmenorrhea is 54.89%, the rest is

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secondary (Health Research and Development Agency, Ministry of Health of the Republic of Indonesia, 2018).

Dysmenorrhea causes stomach pain, dizziness, low back pain, nausea, back pain and can even cause fainting. According to Wijayanti & Selviana, (2019). Dysmenorrhea can be treated by administering painkillers and several medical procedures. Common medical procedures include painkillers, hormone therapy, non-steroidal prostaglandin drugs, and cervical canal dilatation (Siregar & Batubara, 2021). Treatment with drugs can cause addictive effects and dangerous side effects for patients (Hamdiyah, 2019).

Currently, there has been a development in society regarding complementary therapies that can overcome health problems, one of which is menstrual pain. Non-drug treatments that can be done include exercise, warm compresses, relaxation breaks and aromatherapy (Aningsih, 2018). Research by Sari et al., (2013) suggests that warm compresses and alternative aromatherapy are non-pharmacological treatments that can be a therapeutic option to relieve menstrual pain.

Warm compresses are used to fulfill the need for comfort, reduce or relieve pain, reduce or prevent muscle spasms and provide a feeling of warmth in certain areas (the stomach) (Pangesti et al, 2017). Dhirah and Sutami (2018) in their research stated that there were differences in the scale of menstrual pain before giving warm compress therapy, which can be concluded that warm compress therapy had a positive impact in reducing the intensity of dysmenorrhea.

Aromatherapy has a positive effect in that it can stimulate sensory organs, receptors that affect other organs, thus having a strong effect on emotions. The odor response it produces will stimulate the work of the brain's neurochemical cells (Astuti & Lela, 2018). The content of chemical compounds in *Zingiber officinale Roscoe* (Red ginger), namely gingerol, zingerone and shogaol are known to have pharmacological effects such as antioxidant, anti-inflammatory, anti-carcinogenic and analgesic (Febriani et al., 2018).

Susanty and Saputra (2021) in their research showed that the results of the paired sample t-test analysis obtained p value (0.000) < α (0.05), this shows that there is an effect of giving Red Ginger aromatherapy on menstrual pain in teenagers.

Based on the background above, researchers are interested in conducting research with the title "Effectiveness of Ginger Aromatherapy and Warm Compresses on Menstrual Pain in Adolescents".

2. THEORETICAL STUDY

Adolescence is a woman's life cycle where many changes occur, both psychological and biological. Changes in biological development, characterized by biological maturity, namely the start of menstruation (menarche). A very prominent physical disorder in menstruating women is menstrual pain (Rosi Kurnia Sugiharti, 2017).

Menstrual pain or what is called dysmenorrhoea is an imbalance of the hormone progesterone in the blood, causing pain. Women who experience dysmenorrhea will produce ten times more prostaglandins than women who do not experience dysmenorrhoea. (Awaliah Nur, 2018). Symptoms of primary dysmenorrhoea in adolescent girls can be found between 1 and 2 years after experiencing their first menstruation (Mariza & Sunarsih, 2019).

Pharmacological treatment of dysmenorrhea can be done with drugs that can relieve menstrual pain (analgesics), namely the Non-Steroidal Anti-Inflammatory (NSAI) group such as paracetamol, mefenamic acid, ibuprofen. Non-pharmacological treatment of dysmenorrhea can be done with rest, warm compresses, aromatherapy and herbal concoctions (Mintarsih & Sugihartiningsih, 2018).

Research by Rattu et al (2021) showed that the effectiveness of warm compress intervention on menstrual pain (dysmenorrhea) in young women was found. The effectiveness of this warm compress intervention can be seen from the reduction in pain between the intervention group and the control group. Warm compresses cause vasodilation (widening) of blood vessels, resulting in increased blood circulation, oxygen will circulate easily, reduce muscle tension (relaxation) due to muscle spasm (stiffness) so that the pain felt is reduced.

3. RESEARCH METHODS

The research method uses *a quasi-experiment with control group design*. The intervention group was given ginger aromatherapy and warm compresses on the first day of menstruation, while the control group was not given any intervention. Data analysis used the *Mann Whitney test*. The population in this study were all class IX female students at Sriwijaya Middle School, Palembang. The sampling technique used *purposive sampling* totaling 30 respondents. The menstrual pain scale uses *the Numeric Ratting Scale* (NRS).

4. RESULTS AND DISCUSSION

Table 1. Mann Whitney Test Results in the Intervention Group and Control Group

Group	Mean	Mean Difference	Elementary school	*p value*
Intervention	2.56	1.49	0.314	0.001
Control	4.05		0.526	

This research involved 30 respondents who experienced menstrual pain on the first day, divided into 15 respondents in the intervention group and 15 respondents in the control group. Ginger aromatherapy and warm compress interventions were carried out on the first day of menstruation for each respondent. After the intervention is carried out, it is continued with measuring the pain scale using *the Numeric Ratting Scale* (NRS)

Mann Whitney test shown in table 1 show that the average pain scale of the intervention group who were given ginger aromatherapy and warm compresses showed 2.56 or was in the mild pain category and the average pain scale of the control group who was not given the intervention showed 4.05 or included moderate pain category. Meanwhile, the p value obtained was 0.001, meaning that there was a difference in the pain scale in the intervention group which was given ginger aromatherapy and warm compresses for menstrual pain in teenagers compared to the control group which was not given the intervention.

The results of this study are supported by research by Nurafifah et al (2020) which showed that there were differences in changes in menstrual pain between groups who used warm compresses and those who did not use warm compresses in relieving menstrual pain. A *literature review* study by Syafika et al (2022) of 10 articles analyzed found that warm compress intervention was effective in reducing menstrual pain (dysmenorrhea) in adolescent girls. There was a decrease in the pain scale and there were also respondents who did not experience pain after being given a warm compress.

Warm compresses provide an additional heat effect to the body, thereby triggering stretching and can increase blood flow containing oxygen, nutrients and various blood cells throughout the body's tissues and reduce local pain, stiffness, pain in muscles or joints (Nurafifah et al., 2020). The technique used is to place a bottle filled with water with a temperature range of between 40-45 °C for 10 minutes on the stomach area to increase blood circulation and reduce muscle tension, thereby reducing pain.

Susanty and Saputra (2021) in their research showed that the results of the paired sample t-test analysis obtained p value (0.000) < α (0.05), this shows that there is an effect of giving Red Ginger aromatherapy on menstrual pain in teenagers.

Ginger or *Zingiber officinale Roscoe* (red ginger), which is a spice containing gingerol, zingerone and shogaol, is known to have pharmacological effects such as antioxidant, anti-inflammatory, anti-carcinogenic and analgesic (Febriani et al., 2018). Ginger aromatherapy has a relaxing effect because it can stimulate the work of brain neurochemical cells (Astuti & Lela, 2018) to provide a message of comfort and a sense of calm. In this condition, feelings and emotions can be controlled so that you can be calmer in accommodating the pain caused during menstruation.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the research results, it can be concluded that ginger aromatherapy and warm compresses can help relieve menstrual pain. There was a difference in the pain scale in the intervention group which was given ginger aromatherapy and warm compresses for menstrual pain in adolescents compared to the control group which was not given the intervention . It is recommended that health workers intensify education regarding complementary therapies in reducing menstrual pain in adolescents.

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