

Ginger and Warm Water Compress Reduce Complaints of Lower Back Pain in the Elderly in Gaura Village, West Sumba District, Indonesia

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Abstract

Low back pain is among the most frequent causes of discomfort in older adults. Non-pharmacological treatments for patients with low back pain include ginger and heated compresses, which provide a warming sensation and dilate blood vessels to alleviate pain. This study contributes to comparing the efficacy of ginger and tepid compresses on complaints of lower back pain among older people in Gaura Village, the Gaura Health Center's service area. This study employs a quasi-experimental design with a pre-and post-test. The population of this survey consisted of over-60-year-old residents of Gaura Village, with 17 participants in each group. The sampling technique used consecutive sampling. Independent t-test analysis of the differences between the two variables. The average lower back pain scale before the ginger compress was 6.82, while it was 6.12 before the heated compress. Ginger compression yields an average of 3.82, while mild compression yields 3.82. Ginger compresses alleviate low back pain in older people in Gaura Village, the Gaura Health Center's service area (p-value = 0.000). Warm compresses help lower back discomfort in elderly residents of Gaura Village, where the Gaura Health Center is located (p-value = 0.000). -value 0.167. Ginger and warm compresses can alleviate lower back discomfort in older people in Gaura Village, where the Gaura Health Center is located.

Keywords: Ginger Compress; Warm Compress; Lower Back Pain

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1. Introduction

Pain in the lower back, often called low back pain (LBP), can cause pain and requires medical assistance. Back pain is related to disorders of the musculoskeletal system, which can occur in the lumbar and lumbosacral due to injuries to the muscles and tendons of the back due to abnormal pressure (Allegri et al., 2016). Approximately 85% of the total pain cases generally occur over the age of 45 and are associated with complaints of low back pain (Wong et al., 2017).

The population of the United States is 303.9 million people, of which 52.2 million people, or 17.2% of the population, experience low back pain (Ramdas & Jella, 2018). In England, a survey shows that out of 61.32 million people, 36.17 million or 59%, experience low back pain (Wu et al., 2020). Meanwhile, the prevalence of low back pain in Indonesia varies between 7.6% -37% (Deviandri & Ismiarto, 2021). The prevalence of musculoskeletal disease in Indonesia is 11.9%

based on diagnoses by health workers and 24.7% based on diagnoses or symptoms (RI Ministry of Health, 2018). The highest prevalence of diagnoses by health workers was found in Bali (19.3%), while the highest prevalence of symptoms was found in East Nusa Tenggara (33.1%) (Ministry of Health RI, 2018).

For the elderly in East Nusa Tenggara, Indonesia, the prevalence of low back pain is quite high, especially in the age range of 46-55 years among workers, with the majority of respondents being male. Low back pain can be caused by various factors, such as improper work and habits such as lifting weights or sitting for long periods. Low back pain most often occurs at age 35-55 and increases with age. The age group that most often experiences low back pain is respondents over 35 years of age. Low back pain can be shared by everyone, regardless of age, gender, occupation, social status, and level of education. More than

80% of people have experienced low back pain (Ministry of Health RI, 2018).

The residents in Gaura Village, who primarily work as farmers, will do self-massage with the help of their family and use massage balm or oil or with the help of a massage shaman to treat LBP. They will also look for pain relievers (analgesics) and take herbal medicines at health services. If this condition is not immediately addressed and continues, it will have serious impacts, such as decreased performance. Therefore, several alternatives are needed that can reduce this pain (Dehghan & Farahbod, 2014; Rondanelli et al., 2020).

Using Ginger and warm compresses is a common practice for pain reduction, as evidenced by studies conducted by (Forouzanfar and Hosseinzadeh, 2018; Mashadi NS et al., 2013). The herbal plant Ginger is widely recognized for its culinary and medicinal properties. It is commonly used as a spice in cooking and in the preparation of confectionery. It has been traditionally employed as a therapeutic agent to enhance the body's immunity and alleviate various ailments, such as pain and inflammation (Sharifi-Rad et al., 2017). The active compounds present in Ginger, namely gingerols, shogaols, and zingerones, have been found to possess various pharmacological and physiological effects. These effects include antioxidant, anti-inflammatory, analgesic, and anti-carcinogenic properties and the ability to remain non-toxic and non-mutagenic even at high concentrations, as reported by (Mao et al., 2019). Prior research has indicated that Ginger, as an alternative treatment for individuals experiencing low back pain (LBP), has demonstrated significant efficacy in pain reduction subsequent to receiving nursing care (Leung, 2015).

Compresses given at warm temperatures can widen blood vessels, help reduce pain by relaxing muscles, and have a calming effect. In addition, warm compresses can reduce inflammation that causes pain, help relieve pain, and ease muscle stiffness (Malanga et al., 2015). Previous studies found that giving warm compresses could significantly reduce pain in experienced farmers (Imaniar & Sundari, 2020). This is due to the ability of heat to reduce muscle spasms caused by neuronal ischemia, thereby increasing blood flow and vasodilation (Malanga et al., 2015).

In previous studies, the effectiveness of ginger and warm water compresses had not been tested on complaints of low back pain in the elderly. Therefore, the research contributes to research to know the effectiveness of ginger and warm water compresses for complaints of low back pain in the elderly. In addition to warm compresses, it turns out that ginger can be used as aromatherapy, which is through massage and can reduce back pain (Yosali et al., 2022).

2. Method

2.1. Research design

This type of research is a *quasi-experimental* design with *pre and post-test without control*. The research was conducted in Gaura Village, the work area of the Gaura Health Center. The time of implementation of this research was carried out in July 2020

The sample size of this study totaled 34 people and was then divided into two groups based on the comparative numerical formula of pair measurements repeated twice. The sampling technique used consecutive sampling. The inclusion criteria in this study were: (1) Respondents aged 60 years and over, (2) suffering from low back pain, (3) Being able to communicate well, (4) not taking pain relievers such as ointments and oral medications.

2.2. Methods of data collection

Apply a ginger compress to a sore lower back to apply grated ginger to the painful area, then wrap it in a small towel and leave it for 15 minutes every day for seven days. Giving warm compress therapy to the lower back of the elderly who feel pain can be done by placing a small towel that has been soaked in warm water at a temperature between 40-43°C. This therapy lasts 15 minutes every day for seven consecutive days.

2.3. Measurement of Research Instruments

The pain measurement instrument uses the Numeric Pain Scale. A scale of 0 indicates no pain complaints; a scale of 1-3, mild pain; a scale of 4-6, moderate pain; 7-9, severe pain; a scale of 10 unbearable pain (Atisook et al., 2021).

2.4. Statistical Analysis

Statistical analysis was performed using SPSS v.23 (IBM Corp, Armonk, NY). Univariate analysis of numerical data used the mean, average, median, and standard deviation. Bivariate analysis to determine the effect of ginger and warm water compresses using paired t-test. To determine the difference between ginger and warm compresses in the treatment group, the researchers used an independent t-test.

3. Results and Discussion

3.1. Characteristics of Respondents

Table 1 shows the characteristics of the research respondents. Most of the respondents are in the age range of 60-69 years, namely 61.76%. Most of the respondents were female more than male, namely 22 people or 64.7%.

Table 1. Characteristics of Research Respondents

| Variable | Category | Frequencies (34) | Percentage % |
|----------|----------|------------------|--------------|
| Age | 60-69 | 21 | 61.76% |
| | 70 – 79 | 13 | 38.24% |
| Type | Man | 12 | 35.29% |
| Sex | Woman | 22 | 64.7% |

Table 2 and Table 3 shows that the median value of the respondent's lower back pain scale before the ginger compress intervention was 7.00. After being given the ginger compress, it was 4.50. The results of the *Paired T-Test* showed that giving ginger compresses had a p-value of 0.000. These results indicate differences in the scale of lower back pain before and after being given a ginger compress in the elderly.

Table 2. The effect of ginger compresses on reducing pain before and after intervention

| Lower Back Pain Scale | Median | Average | Min | Mom | p-Value |
|-----------------------------|--------|---------|-----|-----|---------|
| Ginger compress pre-test | 7.00 | 6,82 | 5 | 9 | 0.000* |
| Post-Test Ginger Compresses | 4.50 | 3.82 | 2 | 7 | |

**Paired T-test*

Table 3. The effect of warm water compresses on reducing pain before and after the intervention

| Lower Back Pain Scale | Median | Average | Min | Mom | p-Value |
|---------------------------|--------|---------|-----|-----|---------|
| Warm Compresses Pre-Test | 7.00 | 6.12 | 4 | 10 | 0.000* |
| Post-Test Warm Compresses | 4.00 | 3,18 | 1 | 7 | |

* *Paired T-test*

Table 4 It can be seen that the results of the independent t-test show that the p-value is 0.167. These results indicate that there is no significant difference between low back pain after being given ginger compresses and warm water compresses in the elderly.

Table 4. Differences in the scale of lower back pain after the ginger compress and warm compress intervention

| Compress Group | N | Means | P-value |
|---------------------|----|-------|---------|
| Ginger Compress | 17 | 3.82 | 0.167* |
| Warm Water Compress | 17 | 3.18 | |

We evaluate the effectiveness of ginger and warm water compresses in reducing complaints of low back pain in the elderly. The results of our study show that there is an effect of compressing ginger and warm water in reducing pain in the lower back of the elderly. Pain has a significant effect in causing stiffness, swelling, and pain in certain body parts, such as the ankles, lower back, hands, knees, pelvis, and shoulders (Suri et al., 2010). Because the severity of pain is highly subjective, the treatment approach must be tailored to the needs of each individual, even in the same case. Several factors affect pain perception, such as age, gender, culture, beliefs, and cultural values. In addition, people with less knowledge about pain tend to have more difficulty coping with the pain they feel (Torres et al., 2013).

The ginger plant is a plant that has many benefits and has been known since ancient times. This plant can grow well in Indonesia and is a very important spice. Stated that ginger has a very useful pharmacological effect because it can inhibit the synthesis of prostaglandins and leukotrienes (Ahd et al., 2019). These two mediators are known inflammatory substances and, together with histamine, bradykinin, clonidine, and serotonin, can increase the inflammatory process and cause pain. By inhibiting the synthesis of these two substances, ginger can help reduce pain caused by inflammatory processes. In addition, ginger contains gingerol and shogaol compounds which have anti-inflammatory properties and can help reduce inflammation (Semwal et al., 2015).

The analgesic effect of ginger compresses is related to the elements present in ginger. Compounds such as gingerol, shogaol, zingerone, diary (heptanoic and its derivatives), and especially paradol are known to inhibit cyclooxygenase, thereby reducing the formation or biosynthesis of prostaglandins which can cause pain (Mao et al., 2019). The results of our study are supported by research conducted by previous studies that warm ginger compresses can reduce back pain in pregnant women (Abidah & Anggraini, 2022).

One of the non-pharmacological therapies that can be done is to use warm compresses, which can relax muscles, increase mobility, reduce pain, and eliminate joint stiffness (Freiwald et al., 2021). Warm compresses can benefit older people with lower back pain by promoting blood flow, relaxing muscles, and reducing or relieving pain by applying them to painful areas on the back and body. The purpose of warm compress therapy is to increase blood circulation, reduce pain, and provide a sense of comfort and calm. Warm compress therapy effectively reduces pain in the lower back, with a recommended temperature range of 40°C to 43°C (Cahyaningsih et al., 2020).

The application of warm water compresses to painful regions of the body has been shown to enhance blood flow and facilitate the removal of inflammatory products such as bradykinin, histamine, and prostaglandins, which are known to contribute to localized pain (Shim, 2014). Elevated temperatures have the potential to activate nerve fibers that facilitate the closure of synaptic gates, thereby impeding the transmission of pain signals to the central nervous system. Following the application of a warm compress, signals are conveyed to the hypothalamus through the spinal cord. This, in turn, triggers the effector system via heat-sensitive receptors, activating sweating and peripheral vasodilation. The vasodilation process is governed by the vasomotor center located in the medulla oblongata, which is subject to the control of the anterior hypothalamus. This mechanism increases blood flow to inflamed and painful tissues, leading to a reduction in the pain scale in such tissues (Karra et al., 2020; Pizzey et al., 2021).

The findings of our investigation are consistent with prior scholarly inquiry, which suggests that the administration of warm compresses can yield a noteworthy reduction in pain (Kristina, 2022). Applying a warm compress to the affected region induces the propagation of temperature throughout the body or skin, thereby initiating the conduction process. Subsequently, this will initiate vasodilation and induce relaxation of taut muscles, reducing pain.

4. Conclusions and Suggestions

Giving ginger and warm water compresses reduces the scale of lower back pain in the elderly. There was no difference in the lower back pain scale between ginger compresses and warm water compresses after the intervention.

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