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# The Impact of Ginger Compresses on Alleviating Rheumatic Discomfort Intensity in the Older Individuals at the Social Protection House

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A B S T R A C T

Rheumatoid Arthritis is an illness that targets the joints, particularly in the limbs, which can cause pain. Pain management can use non-pharmacological management such as cutaneous stimulation, namely with warm ginger compresses. This non-pharmacological management can help relax the body so that it can block pain receptors that will be perceived in the brain. The general objective in the purpose of this study was to ascertain whether ginger compresses could lessen the intensity of elderly rheumatic discomfort at RPSTW Garut, West Java Province in 2023. Pre and posttest designs were used in a quasi-experimental research design..The study population was 75 people with sampling techniques using purposive sampling methods obtained a sample of 14 people. The results indicated that the average severity Assessing the severity of rheumatic pain prior to the application of ginger compress 6.07 with a deviation standard 0.730. While the typical level of pain after Posttest of was 2,79 with a standard deviation of 0.699. Based on the statistical analysis wilcoxon signed rank test obtained a significant impact analyzing the impact of ginger compresses on rheumatoid arthritis pain intensity among older individuals. Researchers suggest that it should be used as gerontic nursing knowledge material, especially complementary therapies and for it is advised to carry out additional studies again using a true experiment design so that the research results are better and the data obtained are more valid

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## INTRODUCTION

Joints or the tissues surrounding them. which can cause complications in the form of systemic inflammation, the beginning of this disease is characterized by general symptoms such as symmetrical polyarthritis inflammation, stiffness in the morning for more than an hour (Sato et al., 2019).

WHO reported that rheumatic patients in 2022, especially those over 60 years of age, had reached 355 million people, and Experts predict that this figure will rise steadily until the year 2025. According to the Indonesian Ministry of Health (2008) rheumatic diseases tend to attack Indonesian people at the age of 25-74 years and rheumatism ranks first at around 44% of chronic diseases experienced by the elderly. This is because this group experiences various changes in physiological function, one of these changes occurs in the Musculoskletal System where bones lose fluid and become more fragile, kyphosis, the body becomes shorter, joints enlarge and become stiff, tendons shrink and become sclerosed, muscle fiber atrophy (Liu et al., 2018).

According to experts in the field of rheumatism, the signs and symptoms of this disease are pain, redness, swelling, changes in bone and joint shape, decreased physical activity, joint stiffness (Cortese et al., 2019). Among the signs and symptoms of rheumatism, the most complained about is pain. According to (Copur et al., 2022), in his research in Surabaya, pain and joint stiffness are the symptoms most complained of by people with rheumatism. Pain is an uncomfortable sensory and emotional phenomenon resulting from tissue damage (Junaidi, 2021). Rheumatism pain is caused by poliferous damage to the synovial membrane which causes damage to the joint bones, ankylosis and deformity (Octa & Febrina, 2020). Untreated joint pain will have an impact on limitation of movement, threatening the independence and quality of life of the sufferer.

In an effort to reduce pain caused by rheumatism, it is necessary to try or treat both pharmacologically and non-pharmacologically (Lumintang & Wetik, 2021). The World Health Organization recommends that non-pharmacological pain management is preferred over non-pharmacological, because pharmacology has many side effects that are greater for the elderly (Hansildaar et al., 2021). Some pharmacological treatments are the act of administering drugs as pain reducers. Many people tend to choose drugs as the only method to relieve pain. Among the drugs used to relieve rheumatic pain are non-steroidal anti-inflammatory drugs (NSAIDs). Ineffective use of NSAIDs can cause serious side effects such as gastric erosion, gastrointestinal disorders, kidney damage and gastric bleeding. This risk increases with the age of the patient and the dose used.

Some nonpharmacological treatments that can be done as first aid independently when pain attacks in people with rheumatism include relaxation, distraction, massage or massage, cutaneous stimulation, and hot or cold compresses (R. Yuliana, 2021). According to hot compresses can help to alleviate discomfort, inflexibility, and muscle contractions.

One of the compresses to increase warmth is the ginger plant (Deewi et al., 2021). Ginger itself has content in the form of spicy and hot flavors which are also efficacious as anti-inflammatory, antirheumatic, and cold prevention (Perceka et al., 2022a). Gingerol compounds contained in ginger have been shown to have activity as antipyretic, antitussive, hypotensive anti-inflammatory and analgesic. The effectiveness of warm ginger compresses can cause widening of blood vessels, which enhances blood circulation. With enhanced blood flow and oxygen supply to the tissue also increases so that the cells get enough nutrients (Perceka et al., 2022b). The fulfillment of cell nutritional needs will stimulate peripheral nerve endings to send stimulus to the brain to release endorphin hormones that can Induce pain relief and muscle relaxation, thereby diminishing the inflammatory response (Fatmawati & Ariyanto, 2021a).

Ginger is among the non-pharmacological treatment options. that has been widely used for certain conditions such as menstrual pain in adolescent girls (Puspita, Widadi, Alfiansyah, et al., 2023), chronic back discomfort commonly afflicts older individuals, gout pain in the elderly and headache in hypertensive elderly (Syafriati & Fadila, 2023).

Based on data on the history of elderly diseases at RPSTW (Tresna Werdha Social Protection House) Garut Regency in November 2022, rheumatic disease It stands as the most prevalent ailment suffered by older individuals after hypertension, which is 27 elderly from 75 existing elderly (RPSTW Data Garut Regency, November 2022). RPSTW Garut Regency, West Java Province itself is a place made by the government under the auspices of the West Java Provincial Social Service which aims to be able to accommodate neglected elderly on the street, and can also be from the entrustment of underprivileged families.

The results of a preliminary study with interview techniques on 7 elderly people said all of them experienced knee pain, aches, tingling and 2 of them said they almost felt pain radiating throughout the body making it difficult to do activities. Efforts made in handling rheumatic pain pharmacologically and non-pharmacologically only self-massage the pain area using balsam and taking pain medication, while non-pharmacological measures that have been taken are elderly gymnastics, warm baths and light exercise. With the actions that have been taken, from the results of these interviews there are still many elderly people who complain of leg pain and little change in the pain felt by the elderly, taking pain medication too often and massaged in the wrong way will worsen the patient's disease condition. actions such as doing warm ginger compresses, have not been carried out at the Tresna Werdha Social Home.

## LITERATURE REVIEW

### Elderly

Old age represents the final stage of human life, during which is considered as someone who experiences various declines in their life functions (Patyawargana & Falah, 2021). An elderly individual typically refers to someone aged 60 or above and at final stage of degenerative human life accompanied by a decrease in life functions such as physical changes, mental and psychosocial changes (Setyawan, 2022).

Physical changes in the elderly include (Fitrianingshi et al., 2022): a) the innervation system, decreased innervation system relationships, decreased brain weight by 10-20%, slowed responses and reactions, especially to stress, the nerves of the five senses shrink, decreased vision, hearing disappears, nerves of smell and taste shrink, more sensitive to temperature changes, and low resistance to cold. b) Hearing system, reduction in auditory ability within the inner ear c) Vision system, pupillary sphincter sclerosis, reduced response to light, decreased visual field (reduced visual field) decreased accommodation power. d) Respiratory system, respiratory muscles experience weakness caused by atrophy, loss of strength so that they become stiff, and decreased bronchial elasticity. e) Alterations in the musculoskeletal system of older adults include the following: Connective tissue (collagen and elastin), Cartilage has a diminished capacity to regenerate, leading to progressive degeneration. As a result, the cartilage in the joints becomes more susceptible to friction. Bone, longitudinal trabeculations become thin, transverse trabeculations are reabsorbed, the impact of reduced density will result in osteoporosis. Muscle, decreased number and size of muscle fibers. Joints, in the elderly the surrounding the connective tissues surrounding the joints, including tendons, ligaments, and fascia, undergo a decline in elasticity with age. Reproductive system, in women: The vagina contractures and shrinks, the ovaries shrink, the uterus atrophies, the breasts atrophy, the vulva atrophies, the vaginal mucous membrane decreases, the surface becomes smooth, the secretion decreases, the nature becomes alkaline and discoloration The connective tissues around the joints, such as tendons, ligaments, and fascia, lose their elasticity as they age., sexual drive persists until the age of 70 years as long as the health condition is good.

Mental changes are caused by several factors - including: Physical changes, general health, education level, heredity, and environment (Y. Yuliana, 2020). Psychosocial changes in the elderly can be measured through their productivity associated with their role in work. When experiencing retirement (post-retirement), a person experiences loss, including: financial loss, loss of status, loss of friends / relationships, loss of work / activities / routines.

**Rheumatism**

Rheumatism is a condition that affects the limbs, specifically the parts of the body that are connected by joints, causing pain or can be interpreted as a disease of the musculoskeletal system that attacks parts of the body, especially attacking joints and bones accompanied by general symptoms such as inflammation and morning stiffness that can cause pain (Najm et al., 2019).

Genetic factors and several environmental factors have long been suspected of playing a role in the onset of rheumatic disease. The suspicion of an infectious factor arises because generally the turnover of this disease occurs suddenly and arises with a striking inflammatory picture (Gwinnutt, Wieczorek, Rodríguez-Carrio, et al., 2022).

**Pain**

Pain is a sensation of discomfort manifested by suffering caused by real mental perceptions, threats, and fantasies of injury. Meanwhile, according to the (Darnall et al., 2020), defines discomfort is a subjective and unpleasant sensasion

linked with real or potential tissue damage or perceived in situations involving harm (Putra et al., 2021).

Pain is everything that a person says about the expression of subjective discomfort and also an unpleasant emotional experience caused by damage to the tissue. Pain receptors are organs that function to receive pain stimuli. Pain receptors are also called nosireseptors, anatomically pain receptors are bermielien and there are non-myelinized from peripheral nerves (Booker et al., 2019). Based on their location, nosireseptors can be grouped in several parts of the body, namely on the skin (cutaneous), deep somatic, and in the visceral region. Because of this different location, the pain that arises also has different sensations (Friska, 2022).

Sympathetic response, seen in acute pain or surface (suferficial) pain and is a homeostatic response. or parasympathetic, indicating that the body is unable to perform activities. Affective responses, such as helpless silence, resistance, depression, anger, hopelessness, lack of strength (Puspita, Widadi, Wahyudin, et al., 2023).

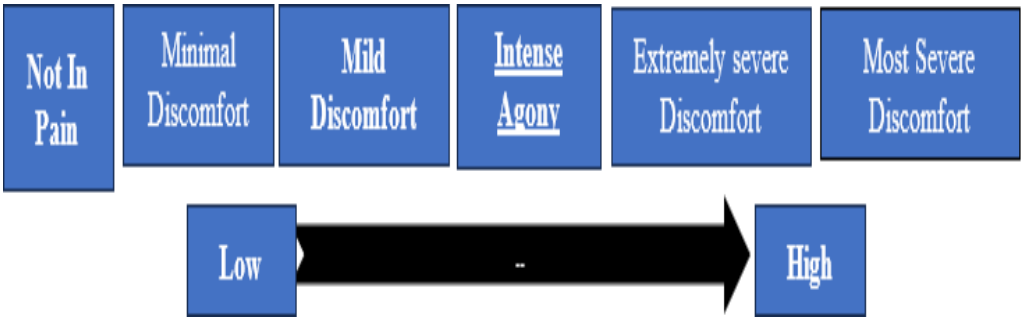


Figure 1. Simple Severity of the Pain

## METHODOLOGY

This study was carried out in April 2023 at RPSTW Garut, West Java Province. RPSTW Garut West Java Province itself is a sub unit of BPSTW Ciparay Bandung Regency under the auspices of the West Java Provincial Social Service which aims to be able to accommodate the elderly who are neglected or entrusted from the family.

This A quasi-experimental investigation is called research utilizing a single-group prior-test and the design of the posttest. Pain assessment was conducted both before and after the intervention (Syamsuddin & Pakaya, 2021). The design form in this research is:

$$01 \longrightarrow X \longrightarrow 02$$

The participants in this study comprised exclusively of elderly individuals. people suffering from rheumatic pain at the Garut Tresna Werdha Social Home, West Java Province, out of the 75 individuals in the population. The method of sampling in this investigation, purposeful sampling, this entailed choosing individuals according to particular standards.

The standards for inclusion in this study are outlined below:

1) Elderly who do not take pain medication
2) Elderly who do not follow other nonpharmacological therapies

3) Elderly who can communicate well

While the exclusion criteria in this study are as follows:

1) Elderly with pain other than rheumatic pain

The sample in this study were some of the elderly who suffered from rheumatism at the Garut Regency Tresna Werdha Social Protection House as many as 14 people. Gathering of data methodology employed in this study used a pain assessment tool, specifically, rating numeric scale was utilized, where participants indicated their pain levels using numbers ranging from 0 to 10.

Before the data was analyzed, the researcher processed the data by stages: checking the correctness of the data obtained, giving numerical codes, entering data into the master table, cleaning up data filling errors. Data analysis framework employed in this study comprises both univariate and bivariate evaluations.

In this study, the variables that were described using uni variate analysis were the intensity of the lung tissue before compression and the intensity of the lung tissue after compression, which were determined by mean and standard deviation. After that, bivariate analysis was performed. However, before to bivariate analysis, the dependent variable, or pain intensity, was tested for homogeneity of variance and data normality. Because the study's sample size is less than fifty and the data is on a ratio scale, Shapiro Wilk is used for the normality test.

Additionally, using the dependent two mean difference test, bivariate analysis was performed to find the average difference in pain intensity in each group before and after the intervention. The bivariate analysis employed a nonparametric test of the Wilcoxon test type since the data were not normally distributed, as indicated by the results of the data normality test.

**RESULTS**

This study investigates the impact of ginger compresses on pain severity. by elderly individuals with rheumatism conducted for 3 (three) weeks from April 10 to April 30, 2018. This study used a sample of 14 people, consisting of 4 men and 10 women. This study uses pre and post methods with one group and one other intervention for respondents.

The research was conducted at the tresna werdha social protection house (RPSTW) Garut Regency, West Java Province. The reason the researchers conducted the research in a shelter for the elderly is because the samples used all participants in this study were elderly and also in the social protection house all disease data every month is recorded so that in determining the pain scale besides being able to ask directly the researcher can see from the history of the disease in the health services provided by the research site.

1. Distribution of Respondents Based on Characteristics

Table 1. Distribusi Frekuensi Characteritics Respondent

| No. | Characteristics | Respondent (n)=14 | Percentage % |
|---|---|---|---|
| **1.** | **Age** | | |
| | Elderly Early (46-55 tahun) | 1 | 7,1 |
| | Elderly late (56-65 tahun) | 4 | 28,6 |
| | Elderly (>65 years) | 9 | 64,3 |
| **2.** | **sex** | | |
| | Man | 4 | |
| | Women | 10 | 71,4 |

According to Table 1, the majority of elderly patients demonstrated Garut are aged elderly (>65 years). And the proportion of gender groups is mostly female.

**2. Univariate Analysis**

In this study, which is described through univariate analysis, namely the results of the quasy experiment one group pretest and posttest design in accordance with the research objectives as follows:

a. Elderly Pain Scale Before Ginger Compress is Given

Table 2. Rheumatic Pain Scale Before Ginger Compress is Given

| Variabel | Mean | Std. Deviation | Min-Max |
|---|---|---|---|
| Pain scale before intervention | 5.79 | 0.426 | 5-6 |

Referring to Table 2 above, it becomes evident that the pain experienced by elderly individuals scale before being given a ginger compress is 5.79 where the scale is at a moderate pain level. The lowest value experienced by the The pain scale for the elderly ranges from 5 to a maximum of 6. With a standard deviation on the pain scale before being given a ginger compress is 0.426.

b. Elderly Pain Scale After Ginger Compress is Given

Table 3. Rheumatic Pain Scale After Ginger Compression

| Variabel | Mean | Std. Deviation | Min-Max |
|---|---|---|---|
| Pain scale after intervention | 2.79 | 0.699 | 2-4 |

The table above shows the average value of elderly people with rheumatism after being given ginger compresses is at 2.79 where the scale is a mild level of pain scale. For the lowest value after being given a ginger compress is 2 and the highest scale is 4. The standard deviation of the pain scale decreases to 0.699 following the application of a ginger compress.

3. Bi Variate Analysis

a. Impact of Ginger Compress on Alleviating Rheumatic Pain Intensity in Elderly

Individuals Before conducting a bivariate analysis of Impact of Ginger Compress on Alleviating Rheumatic Pain Intensity in Elderly Individuals with rheumatism, first conduct a data normality test and a variance homogeneity test on the dependent variable or pain intensity (Roberts et al., 2020).

Drawing insights from the analysis of data pre and post pain scale values obtained, a normality test was first performed using the Shapiro Wilk test. The results obtained from the respondent's data above obtained the p value of the pre the distribution of data values does not adhere to a normal distribution (Singh et al., 2021), The p-value of 0.000 is less than or equal to 0.05, indicating that the post-pain scale data is also not normally distributed, with a p-value of 0.006, also falling below the significance threshold of 0.05.

The data obtained from respondents in the pretest and post test showed abnormal data, if the data is not normal then proceed with data processing using the bivariate analysis formula used is a nonparametric test with the Wilcoxon test type (Gwinnutt, Wieczorek, Cavalli, et al., 2022). Hypothesis testing to determine impact of ginger compress on lessening the level of rheumatic pain experienced by older individuals was assessed utilizing the Z test (Wilcoxon). The findings of the research regarding the impact of ginger compresses on alleviating elderly rheumatic pain intensity are summarized on table below:

Table 4. Impact of Ginger Compress on Diminishing the Severity of Rheumatic Pain in Elderly Individuals

| Variabel | Mean | Std. Deviation | P Value |
|---|---|---|---|
| Pain scale before intervention | 5.79 | 0.426 | 0.001 |
| Pain Scale after intervention | 2.79 | 0.699 | |

Based on the provided table, the analysis utilizing the Z test (Wilcoxon sign rank test) revealed, the mean pain intensity prior to ginger compress (Pre-test) score 5,79, and 0,426 for deviation standard, the mean pain intensity prior to the ginger compress being 5,79. Following ginger compress (Post-test), the average pain intensity decreased to 2.79, and 0,699 for deviation standard. The resulting pvalue of 0.001 is less instead of the predetermined alpha (α) level of 0.05, signifying a significant effect of ginger compress in alleviating the severity of rheumatic discomfort experienced by the older individuals at RPSTW Garut, West Java Province in 2023.

## DISCUSSION

### 1. Difference in Rheumatic Pain Intensity Before and After Ginger Compress

According to the data provided in table 1, the total participant count is recorded. amounts to 14. who reported experiencing rheumatic pain. Rheumatic pain is felt by each respondent differently, ranging from Slight discomfort, moderate discomfort, and intense discomfort. When assessed for discomfort before ginger compress there were 10 respondents or 71.4% experiencing moderate pain, and 4 respondents 28.6% experiencing severe pain. Whereas in pain after Following the application of ginger compress, a reduction in the intensity was observed. of rheumatic pain, namely there were 12 respondents who experienced mild pain, and 2 respondents who experienced moderate pain. According to the researcher, this is because the pain felt by each individual is different and only the person undergoing the pain can accurately describe it and the decrease in pain occurs because the compress is given correctly and regularly where the frequency of giving ginger compresses is done to respondents who experience rheumatic diseases at RPSTW Garut, West Java Province in 2023 once a day for 1 week.

This is supported by (Qiftiyah & Qonitun, 2021) pain is a sensation of discomfort that is manifested by suffering caused by real mental perceptions, threats, and fantasies of injury. Meanwhile, according to the the (Safari, 2018), describes pain as a personal sensation and an adverse emotional response related to real or potential tissue damage, or situations where such damage is imminent.

According to (Probowati, 2018) pain is everything that a person says about the pain and occurs at any time saying that he feels pain. Pain is a warning sign that tissue damage has occurred, which should be a major nursing consideration when assessing pain.

Based on some of the above definitions, the researcher concludes that discomfort's delineated as A disagreeable combination of sensory and emotional experiences encounter connected accompanied by physical harm to bodily tissues, whether existing or anticipated. It encompasses subjective expressions of discomfort and represents an adverse emotional experience stemming from tissue injury.

### 2. Impact of Ginger Compress on the Severity of Rheumatic Pain in the Older Individuals

In summary, the Wilcoxon signed rank test serves as a powerful tool in statistical analysis, enabling researchers to unravel meaningful patterns and make informed decisions based on the data at hand to ascertain the impact of ginger compress depends how severe rheumatic discomfort is, the mean (average) level of discomfort, before receiving a ginger compress is 5,79 and 0,426 for deviation standard (Fatmawati & Ariyanto, 2021b). The mean pain intensity after ginger compress was 2.79 and 0,699 for deviation standard. And obtained a significant pvalue 0.001. Because the p-value < (0.5) inconclusion Ho is turned down. One may claim that ginger has an impact compress on reducing the intensity of older individual rheumatic discomfort in RPSTW Garut, West Java Province in 2023.

Ginger given is grated ginger as much as 20 grams to remove the content and oil in the ginger (Yanti et al., 2019). Ginger in addition to being a spice plant, is also a medicinal plant or herbal therapy that it possesses a pharmacological effect characterized by heat and spiciness, which can alleviate pain, making it effective in reducing rheumatic pain. Ginger has a high content of essential oils and oleoresin ginger, and the heat effect contained in ginger is suitable for use as a medicine in a manner that alleviates the experienced pain both acute pain and chronic pain (Sriwiyati & Noviyanti, 2018).

Ginger compress can reduce pain due to some of the ingredients of ginger as well as the ginger compress technique itself through cutaneous stimulation. Skin stimulation can be among the nonpharmacological treatments that are effective in lowering discomfort, namely the provision of ginger compresses. ginger rhizomes contain important compounds in the form of essential oils. Essential oils have the benefit of relieving pain, as an anti-inflammatory and also a good bacterial exterminator (Susanty & Saputra, 2022). In addition to being used to treat pain, ginger also contains essential oils and oleoresins in the ginger rhizome, the fragrant aroma of ginger is caused by essential oils, while oleoresins cause a spicy taste (Sa'diah et al., 2019).

Ginger compresses function to reduce pain by using the heat effect produced from the oleoresin content which is the pharmacological effect of ginger, the heat effect on ginger can cause vasodilation so that it will cause an increase in blood circulation. With the increase in blood flow, the supply of O2 to the tissue also increases so that the cells get enough nutrients. The fulfillment of cell nutritional needs will stimulate peripheral nerve endings to send stimulus to the brain to release endorphin hormones that can cause Pain-relieving properties. and muscle relaxation Thus, the inflammatory process is reduced (Firdausni & Kamsina, 2018).

According to Gate Control Theory, pain receptors It comprises A-delta fibers responsible for rapid pain signals and C fibers responsible for slower pain signals that have a small diameter. Then there are also A-beta fibers that are wide in diameter carrying impulses generated by tactile stimulus (touch/touch). In the subtansia gelatinosa impulse will meet with a "gate" that opens and closes based on the principle of who dominates more, A-beta tactile fibers or small diameter pain fibers (Tukimin et al., 2018).

Ginger also contains phenol compounds that are proven to have anti-inflammatory effects by eliminating inflammatory agents like bradykinin, histamine, and prostaglandins responsible for localized pain and are known to be effective in expelling joint disease as well as muscle tension (Ardiyan, 2019). In addition, the use of warm ginger compresses contains gingerol, shagaol which can have a physiological effect in decreasing joint pain during the transduction stage, where sensory receptors for pain (nociceptors) Transform energy derived from harmful stimuli (For instance, stimuli like temperature, mechanical pressure, or chemical agents) into nerve signals of an electrical nature, at this phase, ginger, containing gingerol, includes cyclooxygenase that can impede the production of prostaglandins, serving as pain mediators, thereby leading to a

reduction in joint pain. Consequently, ginger emerges as a potential non-pharmacological remedy for alleviating joint pain.

The duration of warm ginger compresses also affects the perceived pain response, in other words, warm ginger compresses are given if the tolerance of each patient's physiological response is different. The tolerance that can be given to someone in giving this warm ginger compress is a maximum of 20 minutes (Susanty & Saputra, 2022). Based on this, all respondents in this study could tolerate the duration of warm ginger compress with 20 minutes. This research is also supported by studies carried out by (Fu et al., 2018), which states that Compresses made of warm ginger can ease discomfort in osteoarthritis sufferers significantly.

Findings of this study align with investigations undertaken by (Rahmawati & Kusnul, 2021), in his research on the impact of a warm ginger compress on lowering uric acid pain severity in the Elderly during Social house Kasih Sayang Ibu, where the p value of 0.000 (<0.05) was obtained from the statistical test findings means that There is a significant correlation between the effect of hot ginger compresses on lowering the potency of uric acid related discomfort among older individuals.

The findings of this research can serve as a foundation for putting into practice nonpharmacological measures to reduce pain intensity. Likewise, ginger compress turned out to Show significant effectiveness in diminishing the intensity of rheumatic pain.

## CONCLUSIONS AND RECOMMENDATIONS

The conclusions obtained from this research include: The average pain scale in elderly people with rheumatism before being given a ginger compress is 5.79 and the data suggests that elderly individuals experience an average pain reduction of 2.79 points after receiving ginger compress treatment, indicating a notable effect of ginger compresses in alleviating pain among this demographic. with rheumatism in the social protection house trensa werdha Garut Regency. For the RPSTW Garut. For elderly who are situated Garut RPSTW region of West Java Province to be able to use ginger as a compress medicine in traditional medicine to overcome the problem of knee pain. Treatment with ginger compresses can be done regularly every day of the week to overcome the pain felt.

## FURTHER STUDY

This research still has limitations, so further research needs to be carried out regarding the topic Impact of Ginger Compress in Reducing the Intensity of Rheumatic Pain in the Elderly in order to perfect this research and increase insight for readers.

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