

# BREATHING RELAXATION AND *LAVANDULA ANGUSTIFOLIA* AROMATHERAPY FOR INSOMNIA REDUCTION IN ELDERLY

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## ABSTRACT

**Background:** Insomnia is a common sleep disorder in the elderly, characterized by difficulties in sleep initiation, sleep maintenance or early morning awakening. Lavender (*Lavandula angustifolia*) is most commonly used in aromatherapy. The fragrance from the oils of the lavender plant is believed to help promote calmness and wellness. It is also said to help reduce stress, anxiety, and possibly even mild pain. This study aimed to determine the effect of breathing relaxation in combination with lavender aromatherapy on the reduction of insomnia in the elderly.

**Subjects and Method:** This was a quasi experimental study with one group pretest-posttest design. A sample of 21 elderly people who experienced insomnia were selected for this study from the Elderly Posyandu, Tambakrejo Waru Village, Sidoarjo, East Java. The independent variable was combination of breathing relaxation and lavender aromatherapy. The breathing relaxation involved slow and deep breathing technique using the diaphragm muscle, allowing the stomach to slowly lift and the chest to expand fully and while inhaling lavender aromatherapy. Lavender aromatherapy was administered while the elderly were in a state of relaxation to help focus on calmness and reduction of stress. This exercise was undertaken for about 20 minutes before going to bed, 6 days for a week long. The dependent variable was insomnia, which was measured by the Insomnia Severity Index (ISI). The ISI is a short subjective instrument measuring symptoms and consequences of insomnia. It is composed of seven items with perceived severity of each item was rated on a 0-4 scale. The total score ranging from 0-28 was obtained by summing the items ratings. The mean score of ISI before and after the intervention was compared with by paired t-test.

**Results:** The mean score of ISI after the intervention (Mean= 14.8; SD= 2.3) was lower than that before intervention (Mean= 21.7; SD= 3.5), and it was statistically significant ( $p = 0.027$ ).

**Conclusion:** Breathing relaxation in combination with lavender aromatherapy is effective in reducing insomnia in the elderly.

**Keywords:** breathing relaxation, *lavandula angustifolia*, lavender, insomnia, elderly.

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## BACKGROUND

Elderly is one of the stages of life that will be experienced by every human being, even though age increases and is accompanied by a decrease in organ function, the elderly can still lead a

healthy life (Kholifah, 2016). With age, the need for sleep rest in the elderly tends to decrease. The elderly need time to sleep 6-7 hours a day, while in adults the time for sleep rest is about 7-8 hours a day (Putra and Widiastuti,

2020). The elderly who experience insomnia or so-called sleep rest disorders are in the form of problems with symptoms of disorders in sleep in the form of repeated difficulties to sleep or maintain sleep even though there is an opportunity to sleep. These symptoms are usually followed by functional disturbances and when they wake up so that during the day the elderly often experience excessive sleepiness and cannot focus on doing something. Insomnia is often caused by an illness or as a result of psychological problems so that the sleep quality of the elderly is disturbed. In this case, medical or psychological treatment is needed (Zahrotul, 2017).

The World Health Organization (WHO) states that the elderly are a group of people aged 60 years or more. Data from the World Health Organization (WHO) in 2015 states that there are 901 million elderly people in the world. This number is expected to continue to increase to reach 2 (two) billion people in 2050. In Indonesia in 2019, the number of elderly people is 9.7% of the total population or about 25.9 million people and in 2035 is estimated to experience an increase of 48 million (15.77%) people. In East Java Province, all regencies have elderly people above 5% of the population, for example Surabaya (8.53%), Sidoarjo District (7.61%), Pasuruan City (8.81%), Gresik District (9.12%), and Pasuruan (9.45%) it tends to be large (Paramita, 2019). Based on a preliminary study conducted on June 10, 2020 in Tambakbulak Hamlet, Tambakrejo Village, Waru District, Sidoarjo, there were as many as 21 elderly people. From the survey results, it was found that from 10 elderly

people, 7 of them experienced sleep disturbances or what is called insomnia.

Age changes come unnoticed, just like the seasons. Gradually, people are getting older. The elderly are starting to realize that their vision is no longer sharp and the quality of hearing is decreasing. Over the same time, older adults' sleep experiences have changed. However, this does not mean that the need for sleep decreases with age. In fact, research results prove that the need for sleep is constant throughout the ages (Danirmala and Ariani, 2019).

Based on the results of study by Rarasta et al. (2018) the incidence of insomnia in the elderly is very high, reaching 43.3% of all elderly subjects experiencing insomnia. The results of another study conducted by (Idris and Astarani, 2019) said that more than 50% of elderly subjects experienced insomnia and often woke up at night. The factors that cause insomnia in the elderly include several aspects, namely in terms of physical, psychological and environmental. Insomnia sufferers show symptoms such as difficulty falling asleep immediately when sleepy, waking up at night or at any time, feeling weak, lacking energy, face looking dull and tired, experiencing unclear anxiety, often having uncontrolled anger, increasing pressure. blood, blurred vision, uncontrolled body movements, weight loss, indigestion, fear at night. This makes the quality and quantity of elderly sleep less (Gera *et al.*, 2019). Management to overcome sleep rest disorders or insomnia in the elderly can be divided into two, namely pharmacological and non-pharmacological. There are several non-pharma-

cological techniques to overcome insomnia including laughter therapy, relaxation and giving lavender aroma (Idris and Astarani, 2019).

Relaxation by giving lavender aromatherapy using a concentration of highly aromatic essential oils extracted from plants can be done to overcome insomnia. Handling Insomnia by giving lavender aromatherapy which is very easy because the molecules of essential oils are volatile and react directly with the olfactory organs in a way that is perceived by the brain (Lestari dan Rodiyah, 2016). The results of the study (Alkan *et al.*, 2017) said that deep breathing relaxation can improve the sleep quality of heart failure patients. Supported by Hasina *et al.*, 2019) which says that deep breathing relaxation can improve sleep quality in patients undergoing hemodialysis. The results of the study (Lauwsen and Dwiana, 2019) proved that giving lavender aromatherapy can reduce insomnia.

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## SUBJECTS AND METHOD

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### 1. Study Design

The design of this study was pre-experimental with the one group pretest - posttest design approach, which is a design that provides treatment to one intervention group, then observed before and after the intervention (Nursalam, 2017) in Tambakrejo Waru District, Sidoarjo Regency.

### 2. Population and Sample

It comprises target population, source population (accessible population), sampling technique, and sample size. The Population of research is all elderly in Tambakrejo Waru District, Sidoarjo

Regency, and the sample has 21 people for this study.

### 3. Study Variables

The independent variable was breathing relaxation and *Lavandula angustifolia* aromatherapy. The dependent variable was insomnia.

### 4. Operational Definition of Variables

**Breathing Relaxation and *Lavandula Angustifolia* Aromatherapy** was intervention to elderly for decrease insomnia level. Breathing Relaxation combination of lavender aromatherapy was relaxation using slow and deep breathing techniques, using the diaphragm muscle, allowing the abdomen to slowly lift and the chest to expand fully and while inhaling lavender aromatherapy which is done in a relaxed state, which focuses on calmness and reducing stress in the elderly so that the quality of sleep for the elderly is good, which will be carried out by researchers for 1 week (6 consecutive days) for 20 minutes before going to bed.

**Insomnia level** was use leveling of Insomnia (no insomnia, light, currently, and heavy).

### 5. Data analysis

Effectiveness of treatment breathing relaxation and *Lavandula Angustifolia* aromatherapy the research using Wilcoxon signed ranks test with  $\alpha < 0.05$ .

### 6. Research Ethics

Research ethical issues including informed consent, anonymity, and confidentiality, were addressed carefully during the study process. The research ethical clearance approval letter was obtained from the Research Ethics Committee at Chakra Brahmamanda Lentera Institute.

## RESULTS

Based on Table 1. it can be seen that most of the subjects have a level of

severe insomnia as many as 11 subjects (52.4%) of a total of 21 subjects

**Table 1. Level of insomnia before breathing relaxation combined with *Lavandula angustifolia* aromatherapy**

Insomnia Level	n	%
Low	1	4.8 %
Moderate	9	42.9 %
High	11	52.4 %

Based on table 2, it can be seen that most of the subjects have mild insom-

nia, as many as 12 subjects (57.1%) out of a total of 21 subjects.

**Table 2 Level of insomnia after breathing relaxation combined with *Lavandula angustifolia* aromatherapy**

Insomnia Level	n	%
Without insomnia	4	19.0
Low	12	57.1
Moderate	5	23.8
High	0	0

Table 3, shows that before being given breath relaxation in a combination of lavender (*Lavandula angustifolia*) aromatherapy the elderly experienced severe insomnia as many as 11 subjects (52.4%) and after being given breath relaxation in a combination of lavender (*Lavandula angustifolia*) aromathe-

rapy none of the elderly experienced have severe insomnia.

Wilcoxon test showed that there is an effect of breath relaxation in a combination of lavender (*Lavandula angustifolia*) aromatherapy on insomnia in elderly.

**Table 3. Cross Tabulation of the effect of Breathing Relaxation combination of lavender aromatherapy (*Lavandula angustifolia*) on insomnia in the elderly**

	Before		After	
	n	%	n	%
No Insomnia	0	0	4	19.0 %
Light	1	4.8 %	12	57.1 %
Currently	9	42.9 %	5	23.8%
Heavy	11	52.4 %	0	0

## DISCUSSION

The results of this study found that most of the elderly had severe insomnia levels, namely 11 subjects (52.4%) of a total of 21 subjects before being given Breathing Relaxation combination of lavender (*Lavandula angustifolia*) Aromatherapy. The problem of

insomnia, which is often experienced by the elderly, has become a serious health problem that must be treated immediately even if only by providing therapy and relaxation, this is due to avoid the negative impacts that may arise. Several factors that trigger insomnia include stress, depression,

anxiety, physical pain, environmental factors, lifestyle, age and gender (Suwardianto and Andynugroho, 2016; Suwardianto and Richard, 2017; Gera *et al.*, 2019) The results of this study are in line with Idris and Astarani (2019) which states that insomnia is the main complaint that is often experienced by the elderly, elderly people over 60 years old have difficulty sleeping and there are changes in sleep patterns. Idris and Astarani (2019) also stated that the elderly also experienced a decrease in physical, psychological and social conditions that interacted with each other. This situation has the potential to cause health problems in general and mental health in particular in the elderly.

As many as 16 of study subjects (76.2%) were female. Psychologically, women have lower coping mechanisms than men in overcoming a problem (Andriani *et al.*, 2019). The existence of a disturbance of a problem or psychological disorder, women will experience anxiety, if the anxiety continues it will experience stress and depression, so that if it continues it will result in an elderly person experiencing insomnia more often than men (Danirmala and Ariani, 2019). Based on the results of the study, most of the elderly aged between 60-74 years as many as 14 subjects (66.7%) of a total of 21 subjects. Insomnia generally occurs in the elderly, namely in adult women / post-menopausal women where at this age there is a decrease in the function of body organs and the production of the hormone estrogen so that they experience psychological problems and experience feelings of anxiety. Psychological conditions and increased

anxiety, anxiety, and emotions are often uncontrolled due to a decrease in the hormone estrogen which is one of the causes of increased sleep disorders (insomnia) in postmenopausal women (Septiani and Muslihati, 2019).

The results of this study are in accordance with the theory which states that postmenopausal women suffer from insomnia more often than men. In some literature it is explained that menopause tends to have an impact on the psyche, namely depression, in patients who are depressed it will interfere with serotonin levels so that it will make that person have difficulty sleeping or insomnia (Rarasta *et al.*, 2018). Elderly education based on the results of the study stated that almost all of the elderly had basic education, as many as 16 subjects (76.2%) of the total 21 subjects and 2 subjects (9.5%) had higher education. Based on a high educational background, subjects can consciously realize the learning process so that students actively develop their potential to have religious spiritual strength, self-control to have self-control, personality, intelligence, and skills needed by themselves, society, and the state so that they can in overcoming a problem, especially in this case insomnia (Musanna *et al.*, 2017).

The level of education also determines whether or not a person absorbs and uses knowledge, the higher the level of education a person will be able to absorb and use knowledge, because by having knowledge of the elderly about insomnia, this knowledge can be used as a guide to prevent and overcome insomnia (Junita *et al.*, 2020). Based on the explanation above, the

level of education can help and increase one's knowledge, the elderly with low education will affect the lack of knowledge of the elderly about how to prevent and overcome insomnia, therefore health workers play an important role in providing health education.

Based on the results of the study, it was stated that almost all subjects did not work as many as 16 subjects (76.2%) of a total of 21 subjects and 3 subjects (14.3%) of whom were entrepreneurs. The results of this study are supported by (Sumirta and Laraswati, 2014) which states that work, is one of the sociocultural factors that can affect the incidence of insomnia, by working allows individuals to be able to access and understand information about health so that the elderly have the knowledge to choose strategies in overcoming insomnia. experienced. Based on the explanation above, according to the researchers, the elderly who are still actively working will quickly feel tired so that the need for sleep rest will also increase, but because the fatigue can also cause the elderly to find it difficult to sleep because the body feels sick as a result of their work, but in order to maintain function cognitively the elderly must remain productive.

This study found that combination of breathing relaxation and lavender aromatherapy reduce the risk of insomnia. The results of this study are supported by Rahmawati (2017), which states that deep breathing exercise can reduce insomnia levels. It is also supported by Vitaliati (2018), which states that religious relaxation using slow deep breathing is effective in reducing the level of insomnia in the elderly so that this program can be

applied to the elderly as part of a health program for the elderly. The results of this study are also supported by Damayanti and Hadiati (2019), which states that giving aromatherapy can reduce the degree of insomnia in the elderly. It is also supported by the results of a literature review conducted by (Muttaqin, 2020) which states that lavender aromatherapy can have a positive effect in improving sleep quality in the elderly, as well as providing calm and comfort effects, reducing feelings of depression, stress, pain, unbalanced emotions, hysteria, frustration and panic so that the sleep quality of the elderly improves.

Breathing relaxation intervention combined with lavender (*Lavandula angustifolia*) aromatherapy is a breathing exercise using slow and deep breathing techniques, using the diaphragm muscle, allowing the abdomen to be lifted slowly and the chest to be fully expanded and while inhaling lavender aromatherapy which is done in a relaxed state and carried out 20 minutes before sleep for 1 week (6 days). Relaxation with the breath in a combination of lavender aromatherapy will make the body more relaxed and comfortable in its sleep. By doing deep breaths slowly, the body will become more relaxed. Feelings of relaxation will be transmitted to the hypothalamus to produce Corticotropin Releasing Factor (CRF). Furthermore, CRF stimulates the pituitary gland to increase the production of Proopiomelanocortin (POMC) so that the production of enkephalin by the adrenal medulla increases. The pituitary gland also produces the hormone endorphins as a

neurotransmitter that affects the mood to relax.

Factors that can reduce the occurrence of insomnia in the elderly include giving deep breath relaxation and giving lavender aromatherapy. To overcome mild, moderate and severe insomnia, it is better to use non-pharmacological intervention management. Non-pharmacological intervention management is safer to use because it does not cause side effects like drugs, because non-pharmacological therapy uses physiological processes (Muttaqin, 2020). In someone who experiences insomnia when inhaling lavender aromatherapy by relaxing deep breaths, it will increase alpha waves in the brain so that enkephalins and endorphins increase and with a stimulus in the form of images of things they like, the elderly will feel more relaxed and comfortable. Comfortable in his sleep. These alpha waves help to relax. So that the effect of lavender aromatherapy will improve sleep quality in the elderly so that insomnia does not occur.

#### **AUTHOR CONTRIBUTION**

Tata Mahyuvi as the writer of this script. Dhian Restika and Perbawani Heru Suwardianto who analyzed the data.

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#### **CONFLICT OF INTEREST**

There are no conflicts of interest

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