

Research Article

The Effect of Foot Massage with Lavender Essential Oil on the Sleep Quality of the Elderly in Banjar Gelumpang Desa Sukawati

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ABSTRACT

Aging process in the elderly will cause health problems such as immobilization, incontinence, depression, malnutrition, decreased immune system, and sleep quality disorders. The purpose of this study was to determine the effect of foot massage with lavender essential oil on the sleep quality of the elderly. This research design used a pre-experimental with one group pre-test post-test design without a control group. The number of samples used was 20 respondents selected by purposive sampling and data collection using the pittsburgh sleep quality index questionnaire with the test result analyzed with Wilcoxon Sign Rank Test. The result showed that in pretest all respondents experienced poor sleep quality, and posttest data obtained that 13 respondents (65%) experienced good sleep quality. The results of data analysis using the Wilcoxon Sign rank test showed that the p -value = 0,000 $< \alpha$ (0,05) which means that there is an effect of foot massage with lavender essential oil on the sleep quality of the elderly in Banjar Gelumpang Sukawati village. Emphasis on certain points and the aroma of lavender will make the elderly feel relaxed so that the quality of sleep improved. It is suggests that the elderly and families to perform foot massage.

Keywords: Foot massage, Lavender essential oil, Sleep quality, Elderly

Introduction

Data from the United Nations Department of Economic and Social Affairs stated that the number of people aged over 60 years in 2015 was 12.3% of the total world population. In 2020, the number of elderly is predicted that it will become 13.5%, 4.9 % in 2025, and 16.4% in 2030. The elderly population in Indonesia is a person aged 60 years and over. It is estimated to double from 12% or 900 million people to 22% or 2 billion in 2050 [1].

Health problems that often occur in the elderly are immobilization, incontinence,

depression, malnutrition, lowered immune system, and sleep quality disorders. In this case, poor sleep quality is not in the spotlight of the broader community as something serious. Society is not familiar with the sleep problem, especially the quality of sleep, so they rarely take medication to overcome them [2]. The Elderly's physical and psychological changes will affect the quality of sleep. Poor sleep quality can cause memory damage and cognitive abilities. Moreover, if it continues for years, it will impact high blood pressure, stroke, heart

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attack, psychological problems as well as depression, and other emotional disorders [3].

Data from the United Nations sleep quality disorders affect about 50% of people in Indonesia aged 65 years. The prevalence of sleep disorders in the elderly increased by 67%. A total of 40% of the elderly group complain of difficulty sleeping, often wake up at night as much as 30%, and other sleep disorders [4].

Massage is one of the therapies that can overcome sleep problems in the elderly [5]. Foot massage is recommended for the elderly because they only use their hands. Besides, it is straightforward to do independently without using physical assistance from others. Massage on the muscle's leg will accelerate blood circulation and facilitate blood flow to the heart [6]. Foot massage activates parasympathetic activity, then provides neurotransmitter signals to the brain, internal organs, and bioelectricity throughout the body. Signals are sent to the brain will flow alpha waves in the brain. Nerve impulses are generated during foot massage that is transmitted to the hypothalamus to produce Corticotropin-Releasing factor (CRF). CRF stimulates the pituitary gland to increase the production of Proopiomelanocortin (POMC), so the adrenal medulla produces endorphins. Endorphins are secreted into the bloodstream can affect the mood to relax [7]. Massage can be combined with lavender essential oil to improve sleep quality because they can be relaxing. Lavender essential oil is the most commonly used for massage because the aldehyde content, which irritates the skin, is only 2% and is not toxic.

Therefore, the purpose of this study was to determine the effect of foot massage with lavender essential oil on the sleep quality of the elderly.

Materials and Methods

This research used Pre-Experimental with One Group Pre-Test-Post Test Design. This research was carried out in Banjar Gelumpang,

Sukawati Village from April 30 - May 15, 2021. The sample of this study was 20 elderly people with poor sleep quality who were recruited using the Non Probability sampling technique with purposive sampling. Data collection using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Pittsburgh Sleep Quality Index (PSQI) questionnaire in Bahasa Indonesia (Indonesian Language) has been tested for validity dan reliability by Widyarani in 2010 [8] It obtained r count ranged between 0,487-0,778 which was higher than r table (0,444) and alpha cronbach showed 0,841 meant reliable.

Treatment was a combination of foot massage and lavender essential oil application in order to get more significant effect for subject. During intervention, firstly soak subject's feet in warm water for about 5 minutes then dry them with a towel. Researcher apply lavender oil to subject's feet and start to massage from metatarsal to the sole of feet. Moderate pressure applied in metatarsal and sole of feet. Then stroke movement applied followed by rotating finger toes slowly and finish the massage with gentle sweeping movement. Each movement repeated for 3-5 times except rotating finger toes. It took 5 minutes for each feet (Azis, 2014 in [9]).

This treatment were chosen because it is simple and can be applied by families at home. So that the researcher also train the families to apply this treatment. Treatment was conducted by visiting subject door to door every day in the afternoon for two weeks. Fifteen minutes spent everyday for treatment session. Researcher and subject wear mask and do regular hand-washing as the research was done in COVID-19 Pandemic. Data analysis used statistical tests to test the effect of foot massage with lavender essential oil on the sleep quality of the elderly using the Wilcoxon sign rank test with a 95% confidence level $p = 0.05$.

Results and Discussion

Results

Table 1. Subject characteristic in Banjar Gelumpang Sukawati Village (n=20)

Demographic		Frequency	(%)
Age	60-65 years	7	35%
	66-70 years	11	55%
	71-74 years	2	10%
Gender	Male	6	30%
	Female	14	70%

Based on table 1 shows that of the 20 respondents, most of them are 66-70 years old, namely 11 respondents (55%) and most of them are women, namely 14 respondents (70%).

Table 2. Elderly's sleep quality level at Banjar Gelumpang Desa Sukawati (n=20)

	Pre test		Post test		P Value
	F	%	F	%	
Poor	20	0%	7	35%	0,001
Good	0	100%	13	65%	
Total	20	100%	20	100%	

Table 2 shows that all respondents before the intervention experienced poor sleep quality (100%). The majority of respondents after being given a foot massage with lavender essential oil are good sleep quality 13 respondents (65%). The test results using the Wilcoxon Sign Rank Test obtained p-value = 0.000 < 0.05 (0.05) so there is an effect of foot massage with lavender essential oil on the sleep quality of the elderly in Banjar Gelumpang, Sukawati Village.

Discussion

The study found there is a significant impact of the foot massage to elderly sleep quality. The previous studies by Widiana, Sudiari, Sukraandini [10] and Sari & Leonard [11] found the similar result that foot massage and lavender essential oil have significant impact to sleep quality of elderly after the intervention.

Foot massage on sleep quality starts from massage on the feet and ends on the soles of the

feet. The foot nerve sensors responded by vasodilating of blood and lymph vessels which affect blood flow to increase and blood circulation to be smooth. The parasympathetic activity provides signals to the brain, internal organs, and bioelectricity throughout the body. Signals are sent to the brain will flow alpha waves in the brain. Alpha waves can help reduce stress and make you relax and help muscle contractions to release chemicals (neurotransmitters) such as serotonin, acetylcholine, and endorphins that can provide a sense of comfort and relaxation. The relaxed state and the feeling of comfort that is felt can reduce the production of cortisol in the blood so that it can provide emotional balance, mental tension and help improve sleep quality [9].

After being given foot massage therapy with lavender essential oil, most of the respondents experienced good sleep quality, because the foot massage therapy given by researchers to respondents made respondents feel comfortable and relaxed.

Researchers believe that the elderly experience good sleep quality because foot massage with lavender essential oil can provide a relaxed feeling from the aroma of lavender essential oil and create a touch that makes the elderly feel comfortable. Massage provides stimulation to the skin and tissues by using varying degrees of hand pressure to increase circulation, and lavender essential oil has a high ester content which is believed to have calming and non-toxic properties. Esters work gently on the skin and provide a calming effect that can increase feelings of comfort and calm so as to improve sleep in the elderly.

All respondents experienced poor sleep quality, as many as 20 respondents (100%). The results of this study are in line with the research of Royani, Rahayu, & Yenti [9], stated that of 15 respondents before being given therapy who had a level of insomnia in the category of moderate insomnia, namely 12 respondents (80%) experienced moderate insomnia and 3 respondents (20%) experienced mild insomnia. Another supporting research result is a study by Sari & Leonard [11] that found 30 respondents (100%) experienced poor sleep quality before being given lavender aromatherapy.

At the age when a person gets older, the ability to stay asleep for six to eight hours will decrease because of a decrease in melatonin which plays a role in sleep regulation. Decreased sleep quality in the elderly due to neurotransmitters in the neurological system. In addition, mental changes such as pessimism, insecurity, and anxiety will affect the sleep quality of the elderly [12]. In line with the research of Dewi, Wahyuni, Andayani, & Griadhi [13], which states that poor sleep quality in respondents aged 65-70 years is 42.1%, when entering old age there will be a degenerative process that will have an impact on physical and mental changes.

Insomnia or sleep disorders are more common in women and the elderly. This is because hormonal factors play a role in creating this difference. Women when feeling tension during premenstrual or postmenopausal times, even when body temperature increases, making it harder for women to sleep. Feelings of women who are very sensitive that disturb their minds will cause women to experience more sleep disorders than men [14]. In line with the research of Lestari & Rodiyah [15], stated that all female respondents experienced moderate insomnia as many as 13 respondents (100%). Psychologically of women have lower coping mechanisms than men, which would make women experience more tension and anxiety so that it becomes a separate stressor for the occurrence of sleep disorders.

Researchers argue that the elderly experience poor sleep quality disorders because as they get older they experience many physical

and psychological changes, poor sleep quality tends to occur in elderly women because of hormonal changes in elderly women from the menopause process so that it can cause sleep disturbances and some elderly wake up in the middle of the night and it is difficult to start sleeping again. This is also due to environmental conditions which of course can make it difficult for the elderly to start sleeping.

It was found that the elderly after being given foot massage therapy with lavender essential oil experienced good sleep quality, namely 13 respondents (65%). The results of this study is in line with Ariani & Suryanti [16], which found 9 (45%) respondents experienced good sleep quality after the intervention. Another supporting research results are Sari & Leonard [11], which got 12 (40%) respondents got good sleep quality after a similar intervention.

Conclusion

Foot massage with lavender essential oil has a positive impact on sleep quality. The impact is given from the massage and aromatherapy of the lavender essential oil. Massage helps the blood flow circulation and the aroma of lavender gives a relaxation feeling. However, further study needs to do, specifically with the different ages of the respondent because the different causes of sleep problems and age might influence this intervention.

Nurse in the community would educate elderly to do foot massages on the night before sleeping time. Besides, nursing homes would provide foot massage therapy with lavender essential oil to take care the elderly with the sleep problem.

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