

THE EFFECTIVENESS OF WARM WATER FOOT SOUND WITH SALT AND LAVENDER FLOWER EXTRACT ON SLEEP QUALITY IN ELDERLY WITH INSOMNIA

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ABSTRACT

*Insomnia is a sleep disorder at night. Soaking feet in warm water with a mixture of salt is a nursing action and non-pharmacological method that can help a person to be more relaxed and comfortable. Lavender (*Lavandula angustifolia*) has a sedative effect because it has the main active ingredient, linalool (C₁₀H₁₈O). The mechanism of lavender flower aromatherapy (*Lavandula angustifolia*) which contains linalool by stimulating an area in the brain, namely the nucleus raphe which will secrete serotonin which can send a person to sleep. The design of this research is a pre-experiment with a one group pre test and post test design. The sample of this study were 34 elderly respondents who were in Rampelsos Pucang Gading Semarang. The results of the study: Most of the characteristics of the elderly (70.6%) were aged 60 – 74 years. Of the 34 respondents, dominated by male respondents, 23 were male respondents. The educational background of the elderly respondents who became the object of most research was Junior High School, which was 35.3%. Prior to treatment, 100% of respondents had poor sleep quality. After treatment, 91.2% of respondents had poor sleep quality and 8.8% experienced good sleep quality. The results of the analysis using statistical tests showed that $p = 0.000$ means that there is an effect of soaking the feet in warm water with a salt solution and a mixture of lavender flower extract on sleep quality of elderly respondents.*

KEYWORDS

Foot soak, salt mix, lavender extract, Sleep Quality, Elderly

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INTRODUCTION

Insomnia is a sleep disorder at night (Martono, 2010). The quality of sleep in someone who has insomnia has decreased and this has an impact on disrupting activities during the day. This is because insomnia will cause sleepiness throughout the day the next day. Lack of sleep can also have adverse consequences such as accidents, falls, decreased cognitive activity, decreased matters related to independent health care, poor health status, decreased quality of life, and ultimately increased mortality (Valizadeh et al., 2015). The most common method for treating or overcoming sleep disorders is pharmacologically by using sedative-hypnotic drugs such as the benzodiazepine group (Ativan, Valium, and diazepam) (Widya, 2010). However, now many studies have examined the effect or effectiveness of various non-pharmacological methods on sleep quality in the elderly. Although the effect is slower, non-pharmacological methods do not have harmful drug side effects such as dependence. One of the non-pharmacological methods that can be used to treat insomnia is to soak the feet in warm water with a mixture of salt.

RESEARCH METHOD

This research is a pre-experiment with a one group pre test and post test design. The design of this study used two groups of subjects who were observed before the intervention, then observed again after the intervention. The sample in this study was 34 respondents, namely the elderly who were in Rampelsos Pucang Gading Semarang who had previously been screened for the level of insomnia using a questionnaire and met the criteria as a sample. Then the sample will be intervened for 20 minutes every day for a week (seven days).

RESULT AND DISCUSSION

a. Respondent Age

Frequency distribution of respondents based on the age of the elderly at the Pucang Gading Social Institution.

Table 1 Frequency distribution of respondents based on the age of the elderly at the Pucang Gading Social Institution

No	Age	Frequency (f)	%
1	60 – 74 Year	24	70,6
2	75 – 90 Year	9	26,5
3	> 90 Year	1	2,9
	Total	34	100%

From the characteristics of the age of the respondents, it is dominated by the age of 60-74 years, namely the elderly category with a total of 24 respondents (70.6%). While in the elderly (old) 75-90 years there are 9 respondents (26.5%). And there is only 1 respondent (2.9%) in the very old age category (very old) above 90 years old.

b. Gender

Frequency distribution of respondents based on the gender of the elderly at the Pucang Gading Social Institution

Table 2. Frequency distribution of respondents based on the gender of the elderly at the Pucang Gading Social Institution

No	Gender	Frequency (f)	%
1	Male	23	67,6
2	Female	11	32,4
Total		34	100%

Distribution of respondents by gender, most of the respondents were male with a total of 23 respondents (67.6%) while respondents with female sex were 11 respondents (32.4%).

c. Level of education

Frequency distribution of respondents based on the education level of the elderly at the Pucang Gading Social Institution

Table 3 Distribusi Frekuensi responden berdasarkan tingkat pendidikan lansia di Panti Sosial Pucang Gading

No	Level of Education	Frequency (f)	%
1	No school	5	14,7
2	Elementary School	8	23,5
3	Junior High School	12	35,3
4	Senior High School	7	20,6
5	Colleg	2	5,9
Total		34	100%

d. Description of the sleep quality level of the elderly before doing a foot soak in warm water with a mixture of salt and lavender extract

Table 4 Distribution of respondents' sleep quality levels before treatment

No	Sleep Quality	Frequency (f)	%
1	Poor Sleep Quality	34	100
Total		34	100%

The table above shows that 100% experienced poor sleep quality with an Insomnia Rating Scale score >5

e. Description of the sleep quality of the elderly after a foot soak in warm water with a mixture of salt and lavender extract

Table 5 Distribution of respondents' sleep quality levels before treatment

No	Sleep Quality	Frequency (f)	%
1	Poor Sleep Quality	31	91,2
2	Good Sleep Quality	3	8,8
Total		34	100%

The table above shows that there are 31 respondents (91.2%) who experience poor sleep quality and 3 respondents (8.8%) who experience good sleep quality after treatment.

f. Analysis of the Effect of Warm Water Foot Soak with a Mix of Salt and Lavender Extract on Sleep Quality in the Elderly

The results of the analysis of Paired t test scores of sleep quality after giving a foot soak in warm water with a mixture of salt and lavender extract at the Pucang Gading Social Home in Semarang.

Variable	Mean	Std. Deviation	t	Signifikan (2-tailed)
The effect of giving a foot soak warm water with a mixture of salt and lavender extract on the sleep quality of the elderly at the Pucang Gading Social Home in Semarang	3,941	0,365	10,78	0,000

Table above describes the 2-tailed results or $p = 0.000$ so that the p value < 0.05 indicates that there is an effect of foot soaking in warm water with a mixture of salt and lavender extract on the sleep quality of respondents.

Discussion

From the research results, it is shown that the characteristics of respondents based on age are mostly dominated by respondents aged 60-74 years with a total of 24 respondents (70.6%). According to WHO, the elderly are divided into four criteria: middle age (middle age) is 45-59 years, elderly (elderly) is 60-74 years, old age is 75-90 years, very old age (very old) is over 90 years old. This is in line with research conducted by Allehe Seyyedrasooli, Leila Valizadeh, Vahid Zamanzadeh, Khadijeh Nasiri, and Hossein Kalantri in 2013 which obtained data that of 50 respondents aged 60-75 years experienced sleep disorders or insomnia and some were male.

From the analysis of the data before treatment was carried out on the respondent, the respondent's sleep quality was measured using a PSQI (Pittsburgh Sleep Quality Index) questionnaire in the questionnaire consisting of 7 question components regarding: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, habits use of sleeping pills and disruption of activities during the day. Of the 34 respondents who were measured using the questionnaire, all respondents were categorized as having poor sleep quality with a score of more than 5. This is in line with research conducted by (Seyyedrasooli et al., 2013) which Obtaining data from 50 respondents who were tested using the PSQI questionnaire all experienced sleep quality disorders.

The normal human sleep cycle consists of 2 phases, namely NREM (Non-Rapid Eye Movement) and REM (Rapid Eye Movement). NREM is the initial phase which consists of 4 stages. The first stage lasts 3-5 minutes. In the second stage the eyeballs do not move and sleep deeper. The third stage of sleep is deeper and the last one is in the deepest phase so that it is difficult to wake up. The NREM phase lasts for 70-100 minutes followed by REM. This phase lasts for 5-30 minutes and reappears every 90 minutes and it is during this phase that sleep dreams occur. In normal sleep, NREM and REM cycles occur 4-7 times every night. Insomnia can be defined as both a disorder and a symptom. Insomnia as a disorder is a condition in which a person has difficulty sleeping, has difficulty maintaining sleep or poor sleep quality and is accompanied by complications (Valizadeh et al., 2015)

Factors that cause sleep disorders. Based on the 3P theory, there are 3 factors of insomnia, namely predisposing, precipitating and perpetuating. Predisposing factors consist of biological characteristics, lifestyle, social characteristics and psychological conditions. Precipitating factors include traumatic events that have been experienced, the presence of chronic diseases and mental disorders. Perpetuating factors are the transitional

limits of acute and chronic insomnia which include sleep hygiene and sleep believe (N. Sayekti & Hendrati, 2015). Sleep hygiene is one of the important factors in the emergence of cases of insomnia. Sleep hygiene consists of the sleep environment and habits or behaviors that are carried out before bedtime. Changes in sleep hygiene to a better direction can improve the quality and quantity of sleep. Improper application of sleep hygiene will actually cause a person to experience insomnia (N. P. I. W. Sayekti & Hendrati, 2015)

Experts have researched a lot about the impact of insomnia specifically on the elderly. In addition to increasing the risk of generative diseases such as hypertension and heart disease, depression and stress are also manifestations of this sleep disorder (Plante et al., 2012). Insomnia also increases the risk of falls in the elderly (Díaz & Ruano, 2011) as well as suicidal ideation and drug abuse (Brook et al., 2015) The long-term impact of insomnia is to change a person's sleep patterns. At the age of about 50 years, the wave of sleep begins to decrease so that in old age the quantity of deep sleep in a person will decrease (Cooke & Ancoli-Israel, 2011). Several diseases that are often associated with insomnia but can also be the cause of insomnia are arthritis, hypertension, cancer and diabetes (Hellström, 2013)

After being treated with a foot soak in warm water with a mixture of salt and lavender extract, it was found that there were 31 respondents (91.2%) who experienced poor sleep quality and 3 respondents (8.8%) who experienced good sleep quality after the treatment. There was a decrease in the score on the PSQI questionnaire which indicated better sleep quality. And a statistical test was carried out using the Paired T Test to get the results of $p < 0.05$ which can be concluded that there is an effect of soaking the feet in warm water with a solution of salt and lavender extract on the sleep quality of the elderly. From research conducted by (Seyyedrasooli et al., 2013), it was found that foot soaking with warm water is effective on the sleep quality of the elderly and can improve the quality of sleep in the elderly sleep duration. One way to overcome insomnia is by non-pharmacological methods. There are many non-pharmacological therapies, one of which is hydrotherapy. where in this technique utilizes water to heal and relieve various complaints so it is known as a therapeutic method with a low-tech approach that relies on the body's responses to water. This form of therapy can help a person to reduce various complaints, one of which is by soaking the feet (Sulaiman, 2009). Foot soak therapy (foot hydrotherapy) also helps improve blood circulation by widening blood vessels so that more oxygen is supplied to the tissues. Improved blood circulation also facilitates lymph circulation so that it cleanses the body of toxins (Wulandari, 2016)

Changes in skin temperature and core body temperature have functions related to sleep and wake cycles. There is a negative relationship between core body temperature and sleep tendencies. When core body temperature decreases, sleep onset is easier. The fall in core body temperature before and during sleep is associated with dilation in the peripheral blood vessels and it can move heat from the core body to the peripheral blood vessels. Therefore, foot soaks in warm water with a mixture of salt can increase peripheral body temperature without increasing or decreasing core body temperature and can improve sleep quality and facilitate sleep initiation (Liao et al., 2008). This is supported by research conducted by (Khotimah, 2012) that warm water bath therapy on the feet improves blood vessel myocirculation and vasodilation thereby increasing the quantity of sleep. In addition, we can add aroma as part of the body's response to relaxation. The scent of lavender flowers is not only distinctive, but also calming. The aroma contains anti-neurodepressive which can provide a relaxing effect that provides calm. Even the sedative effect of using lavender aromatherapy at night can help you fall asleep faster.

CONCLUSION

Characteristics of the elderly who followed the foot soak in warm water with a solution of salt and a mixture of lavender flower extract, most of them (70.6%) were 60 – 74 years old. Of the 34 respondents, dominated by male respondents, 23 were male respondents. The educational background of the elderly respondents who became the object of most research was Junior High School, which was 35.3%. Prior to the treatment of foot soak in warm water with a salt solution and a mixture of lavender flower extract, 100% of respondents had poor sleep quality. After the foot soak treatment in warm water with a salt solution and a mixture of lavender flower extract, 91.2% of respondents had poor sleep quality and 8.8% had good sleep quality. The results of the analysis using statistical tests showed that $p = 0.000$ means that there is an effect of soaking the feet in warm water with a salt solution and a mixture of lavender flower extract on the sleep quality of elderly respondents.

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