

ARTICLE INFORMATION

Received: January, 04, 2023

Revised: May, 30, 2023

Available online: June, 04, 2023

at : <http://ejournalmalahayati.ac.id/index.php/nursing/index>

## The effects of slow-stroke back massage on anxiety and sleep problems in elderly stroke patients

Syarifah Lubbnah\*, Awis Hamid Dani, Septi Warni Asih

Sekolah Tinggi Ilmu Kesehatan Cirebon

Corresponding author: \*E-mail: [lululubbnah@gmail.com](mailto:lululubbnah@gmail.com)

### Abstract

**Background:** The increasing population of the elderly may cause a large burden of health problems, such as poor sleep quality and anxiety. It was reported that as many as 20 percent – 50 percent of the elderly population in Indonesia experienced sleep problems, and 35 percent of the elderly who had anxiety also had the same problems. Slow Stroke Back Massage (SSBM) may be given as a non-pharmacological to increase sleep quality.

**Purpose:** To analyze the effect of SSBM on sleep quality and anxiety in the elderly at the Tresna Wreda As-Salaam Social Institution, Cirebon City.

**Method:** The pre-experimental design with one group pretest and posttest design. The 15 elderly was the sample, as a total sampling technique was used. The Pittsburgh Sleep Quality Index (PSQI) and Geriatric Anxiety Scale (GAS) questionnaires were used as instruments for measuring sleep quality and anxiety levels. The sleep quality was analyzed by Wilcoxon test and Paired sample t-test was used to analyze anxiety variables.

**Results:** Before the SSBM, all the elderly (100 percent) had poor sleep quality and the majority (93,3 percent) had moderate anxiety levels. Whereas after the intervention, the majority (93,3 percent) had good sleep quality and mild anxiety levels (73,3 percent). The p-value of the Wilcoxon test was 0,001 for sleep quality, and the p-value of paired sample t-test was 0,000 for anxiety.

**Conclusion:** This study indicated that there was a positive effect of SSBM on sleep quality and anxiety levels in the elderly. It is recommended for nurses to widely implement SSBM to help reduce the elderly's anxiety and sleep problems.

**Keywords:** Slow Stroke Back Massage (SSBM); Elderly; Sleep Problems; Anxiety.

### INTRODUCTION

The elderly population is increasing every year. It was reported that in 2015 the world's elderly population reached 12.3%, 11.6% in Asia and 8.1% in Indonesia. Meanwhile, it is projected that by 2030, the number of the 65 and older population will be over 71 million, and the 75 and older will be over 33 million (Centers for Disease Control and Prevention, 2018). Although aging is a global phenomenon, the increasing population of older individuals may carry a large burden on their health problems, such as sleep

disorders (Gulia & Kumar, 2018; Zai, 2019).

Sleep disorders are problems related to sleep quality that may be experienced by all ages, so that sleep disorders are a health problem throughout the world. In China, the prevalence rate of elderly people with sleep problems is found to be 50% of elderly in community and 70% were from elderly in long-term care institutions (Li, Xu, Chen, & Zheng, 2020). In Indonesia, data shows that about 20% to 50% of the elderly reported having sleep disorders, and about

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17% had serious sleep disorders every year (Suarilah, Hayat & Indarwati, 2020).

Decreased sleep quality in the elderly cannot be separated from the consequences of the aging process (Mirawati, 2021; Arnata, Rosalina & Lestari, 2018). Elderly who experience decreased sleep quality will find it difficult to maintain sleep or start sleeping. Poor sleep quality in the elderly can lead to various problems such as problems with physiological and psychological balance disorders, decreased productivity, and cognitive decline (Paramurthi, Tri & Suparwati, 2019). Therefore, it is necessary to pay more attention to the problem of the elderly who have decreased sleep quality.

Besides the many complaints of the elderly who experience a decrease in sleep quality, the elderly are also prone to anxiety. It is noted that the number of anxiety incidents in Indonesia ranges from 9%-12% of the general population and 17%-27% of the reports obtained from public health care (Rona, Ernawati & Sapto, 2021). A person who has an anxiety disorder can also experience sleep problems. Based on data from the Ministry of Health of Indonesia in 2007, it was reported that 35% of the elderly who had anxiety disorders also experienced insomnia (Witriya, Utami, & Andinawati, 2016). Anxiety problems experienced by the elderly can also cause difficulty sleeping, low concentration, and also increased health risks (Latief, Susilaningih, & Maulidia, 2020).

There are two approaches in the management of decreased quality of sleep and anxiety problem, namely pharmacological and non-pharmacological. Administration of drugs is identical to pharmacological. Meanwhile, complementary therapy is one of the non-pharmacological therapies that is beneficial for reducing sleep problems (Mirawati, 2021). Several complementary therapies can be given. One of the treatments that can be done to reduce the problems experienced by the elderly related to decreased sleep quality and anxiety is Slow Stroke Back Massage (SSBM). Slow Stroke Back Massage (SSBM) is an act of giving massage to the back or shoulder area with a slow hand touch and certain movements (Paramurthi et al., 2019).

Based on the preliminary study on September

30th, 2021 at the Tresna Wreda As-Salaam Social Home in the Kesambi District, Cirebon City, 11 elderly people were found, and 72,7% (8 participants) of them complained of experiencing a decrease in sleep quality, such as being easy to wake up at night while sleeping, difficult to continue sleeping again after being awake, and difficulty in starting sleep at night and day. In addition, when the interview was conducted, as many as 36% of them (4 participants) also showed anxiety problems such as a sense of worry in the face of death, being abandoned by their families, and feeling lonely or lost.

## RESEARCH METHOD

This study used a pre-experimental design with one group pretest and posttest design. The SSBM as the intervention was given in only one group of elderly, in order to analyse the differences in the elderly's sleep quality and anxiety before and after treatment. The intervention was given in three consecutive days for each elderly, with one day for one session. Each session was around 10 minutes to finish. The population and sample of this study were 15 elderly women at the Tresna Wreda As-Salaam Social Home, Cirebon City. The sampling technique used was total sampling. This study used questionnaires as the research instruments. To determine the level of sleep quality, the Pittsburgh Sleep Quality Index (PSQI) questionnaire was used. This questionnaire consists of 7 items. Each item has point range from 0-3. To decide the final score, all the scores of 1 to 7 are summed up. The sleep quality is good if the score is 5 and less, and if the total score is more than 5, then it is categorized as poor sleep quality.

The Geriatric Anxiety Scale (GAS) questionnaire was utilized to determine the level of anxiety. This questionnaire consists of 30 items which asking about the emotional conditions' state in the range of 0 to 3 for each question. Score zero (0) means never, score one (1) means sometimes (1-2 days/ week), score two (2) means often (4-5 days/week), and score three (3) means always or every time. The total score ranges from 0 to 90. The higher the score, the lower the anxiety level. Score 0-22 means mild anxiety level, score 23-45 means moderate anxiety level, and score

**Syarifah Lubbnah\*, Awis Hamid Dani, Septi Warni Asih**

Sekolah Tinggi Ilmu Kesehatan Cirebon

Corresponding author: \*E-mail: lululubbnah@gmail.com

DOI: <https://doi.org/10.33024/minh.v6i1.8874>

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46-68 means severe anxiety level. Lastly, score 69-90 indicates panic disorders.

One on one interview technique was the used as the subjects were unable to read the questionnaire by

themselves. Analysis of the data used for the quality of sleep was Wilcoxon test, while Paired sample t-test was used to analyses the anxiety variable before and after treatment.

## RESEARCH RESULTS

**Table 1. Distribution of The Characteristics of The Participants (N=15)**

<b>Variables</b>	<b>Results</b>
<b>Age (Mean±SD)(Range)(Years)</b>	(68.27±5.625)(60-80)
<b>Sleep Quality Pre-Intervention (n/%)</b>	
Good	0/0
Poor	15/100
<b>Sleep Quality Post-Intervention (n/%)</b>	
Good	14/93.3
Poor	1/6.7
<b>Anxiety level Pre-Intervention (n/%)</b>	
Mild anxiety	6/40.0
Moderate anxiety	8/53.3
Severe Anxiety	1/6.7
<b>Anxiety level Post-Intervention (n/%)</b>	
Mild anxiety	11/73.3
Moderate anxiety	4/26.7
Severe Anxiety	0/0

From table 1 above it is known that the age of the participants with a mean of 68.27 and a standard deviation of 5.625 and the youngest age is 60 years and the oldest age is 80 years.

Frequency distribution of sleep quality it is shows that before the SSBM was given, all subjects (100%) experienced bad sleep quality, and after being given the SSBM intervention (post-test), the majority of the elderly had good sleep quality, as many as 14 (93.3%), and only 1 (6.7%) had bad sleep quality.

Frequency distribution of anxiety it is showed that before the SSBM was given (pre-test), around a half of the subjects (53,3%) had moderate anxiety level, and after the SSBM (post-test), majority of them (73.3%) reported mild anxiety level, and only 4 (26.7%) experienced moderate anxiety. None of them reported severe anxiety.

**Syarifah Lubbna\*, Awis Hamid Dani, Septi Warni Asih**

Sekolah Tinggi Ilmu Kesehatan Cirebon

Corresponding author: \*E-mail: lululubna@gmail.com

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**Table 2. Normality Test Results of Data Distributions**

SSBM Intervention	p-value	Analysis
Sleep Quality (Pre)	0,081	Normal
Sleep Quality (Post)	0,004	Abnormal
Anxiety (Pre)	0,099	Normal
Anxiety (Post)	0,074	Normal

Based on table 2, the result of Shapiro Wilk Test on the data of sleep quality before SSBM (pre-test) was normal (p-value of 0.081). Meanwhile, the data distribution of post-intervention data was abnormal, with the p-value of 0.004 ( $p > 0.05$ ). The data distribution of anxiety level pre- and post-intervention were normal, with the p-value of 0.099 ( $p > 0.05$ ) and p-value of 0.074 ( $p > 0.05$ ) consecutively.

**Table 3. Bivariate Analysis of The Effect of SSBM on Sleep Quality and Anxiety level**

Variable	Type of Test	Asymp.Sig (2-tailed)
Sleep Quality (pre and post SSBM)	Wilcoxon	0,001
Anxiety level (pre and post SSBM)	Paired-T test	0,000

Based on table 3, it is showed that data analysis on sleep quality before and after the SSBM resulted in a Sig. (2-tailed) value of 0.001 ( $p < 0.005$ ). The table also shows that the value of sig. (2-tailed) of anxiety level before and after the intervention is 0.000 or  $p < 0.05$ . It means that there was an effect of Slow Stroke Back Massage (SSBM) on Sleep Quality and anxiety in the Elderly at the Tresna Wreda As-Salaam Social Home, Cirebon City in 2022.

## DISCUSSION

### Sleep Quality

This study (table 1) found that all subjects (100%) had poor sleep quality. These results are in line with previous research on the effect of skin stimulation: Slow Stroke Back Massage on improving sleep quality in the elderly. It was found that all the elderly (100%) in the study also had poor sleep quality before SSBM (Suarilah et al., 2020). Sleep quality is a person's ability to maintain sleep in normal Rapid Eye Movement (REM) and non-REM sleep stages. Compared to younger people, older people tend to sleep less at night. This may be influenced by the aging process. Several problems such as delayed

onset of sleep, reduced sleep duration at night, and multiple awakenings and awakenings may be experienced, and sleep disturbances may become worse if other physical conditions and external disturbances are present. Therefore the impact of not getting enough sleep can cause various sleep complaints (Latief et al., 2020). Based on interviews conducted by researchers, the majority of poor sleep quality in the elderly is caused by physical problems such as itching, dizziness, breathing problems, feeling lonely, anxiety, pain due to stomach ulcers, and low physical activity.

This study found that after being given Slow Stroke Back Massage (SSBM), almost all subjects (93.3%) reported more restful sleep, namely good quality sleep, while only one still had poor sleep quality. This research is in line with the results of research conducted in Samarinda regarding the effect of Slow Stroke Back Massage on sleep quality in patients with type 2 diabetes mellitus. The results of the study concluded that giving SSBM led to better sleep quality because participants in the treatment group experienced good sleep quality after being given Slow Stroke Back Massage (SSBM), as many as 9 (75.0%)

Syarifah Lubbnah\*, Awis Hamid Dani, Septi Warni Asih

Sekolah Tinggi Ilmu Kesehatan Cirebon

Corresponding author: \*E-mail: lululubbnah@gmail.com

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participants and only 3 (25.0%) participants in the study still experienced poor sleep quality (Hayati & Wibowo, 2021).

The provision of SSBM can improve sleep quality problems because the benefits caused by massage activities are primarily able to provide a sensation of relaxation to the body. This is because the tactile response in body tissues can stimulate nerve points which are then sent directly to the brain to trigger the release of chemicals such as endorphins that can cause a sense of comfort, reduce pain, being relaxed, relieve blood tension, repair joints, and reduce stress (Mirawati, 2021).

In this study, almost all participants experienced changes in sleep quality to good sleep quality, especially at night. They find it easier to fall asleep because their bodies are more relaxed after intervention. Some report that the insomnia is less than before intervention. In contrast, only one respondent still experienced bad sleep quality. Bad sleep quality can be motivated by the level of anxiety experienced by the elderly. Although the sleep quality score after being given the SSBM intervention is still relatively bad, the total score has decreased compared to the score for the level of sleep quality before being given the SSBM intervention.

### **Anxiety**

This study found that all subjects (100%) reported anxiety, with 53.3% of them experiencing moderate anxiety. This research is in line with previous research on the effect of Slow Stroke Back Massage on anxiety in patients with type 2 diabetes mellitus in the working area of the Juanda Health Center, Samarinda City. It is known that all 12 participants experienced anxiety before being given SSBM intervention (Wulandari, Wibowo & Muflihatun, 2020).

Anxiety is synonymous with feelings of fear experienced by individuals related to shocking events or situations. Anxiety is also similar with always having situations that provoke very strong fear (Wulandari et al., 2020). In other words, anxiety is the reaction of mind and body to dangerous, stressful, or unfamiliar situations. It is more like a sense of distress and uneasiness in or before a significant event. In the

elderly, anxiety may also arise as a result of the aging process, because the aging process can affect their psychological state such as emotional changes (irritability), depression, and the emergence of anxiety experienced by an individual in response to a physical change (Pramana, Okatiranti, & Ningrum, 2016). According to the interviews of the subjects, it can be assumed that the reasons of their anxiety feeling were decreased physical abilities, financial problems, feelings of fear of death, feelings of decreased ability to memorise, and feelings of being abandoned by their families.

This study found that after SSBM intervention, 73.3% of subjects experienced mild anxiety, and 4 (26.7%) subjects experienced moderate anxiety. These results are similar to studies on the effect of SSBM on patients undergoing cataract surgery. It was found that in the treatment group, anxiety levels decreased in all subjects (30 people) after being given SSBM intervention before surgery. The average value was 45.16 which was originally worth 49.7 then the standard deviation value before being given the SSBM intervention was 5.43 and after being given intervention it was 3.89 (Keramati, Sargolzaei, Moghadasi, Basirinezhad, & Mohammadpourhodki, 2019).

The decrease in the level of anxiety experienced by a person after being given Slow Stroke Back Massage (SSBM) intervention can be explained physiologically. This is due to tactile stimulation that can elicit a complex neurohormonal response to the hypothalamic pituitary axis or known as HPA through the central nervous system pathway, which in turn is propagated through the cortex, midbrain, and is interpreted as a relaxation response. Positive interpretations resulting from tactile stimulation increase corticopine secretion from HPA. Which corticotropin will further reduce the secretion of adrenocorticotrophic hormone and cortisol, causing relaxation (Amila & Sembiring, 2020; Schnorr, & Bachner, 2016; Kenney, 2011).

In this study, the level of anxiety experienced was not significantly reduced. It could be due to other factors, both internal and external, such as the aging process itself, emotional changes, personal

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Sekolah Tinggi Ilmu Kesehatan Cirebon  
Corresponding author: \*E-mail: lululubbnah@gmail.com

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relationships with family, etc. However, the results of observations and interviews showed that some elderly people whose anxiety levels before being given the SSBM intervention were at levels of severe and moderate anxiety, but after being given the intervention the subjects stated they felt more relaxed than before.

### **The Effect of Slow Stroke Back Massage (SSBM) on Sleep Quality and Anxiety**

Based on the research results, it is known that there is an increase in sleep quality and a decrease in anxiety levels in the elderly. By using the Wilcoxon test in analyzing sleep quality data, a p value of 0.001 ( $<0.05$ ) was obtained. This shows that there is an effect of Slow Stroke Back Massage (SSBM) on sleep quality in the elderly. This research is in line with research conducted in the Work Area of the Juanda Health Center, Samarinda City, it is known that there is an effect of giving Slow Stroke Back Massage intervention on the quality of sleep of people with diabetes mellitus with a p-value of 0.008 ( $p < 0.05$ ). These results were found after administration of SSBM intervention for 3 consecutive days (Hayati & Wibowo, 2021). Previous research also showed the same result. In a study conducted in 2014 concerning the effectiveness of Slow Stroke Back Massage on the sleep quality of patients in the ICU, the p value was obtained in the treatment group of 0.012 ( $p < 0.05$ ) indicating a significant difference in sleep quality before and after being given Slow Stroke Back Massage for 3 consecutive days (Shinde & Anjum, 2014).

Meanwhile, for the anxiety variable, the parametric statistical test was used, namely the paired sample t-test. The p value was 0.000 ( $p < 0.05$ ), comparing the average anxiety level of the subjects before and after being given SSBM intervention. These results indicate that there is an effect of Slow Stroke Back Massage (SSBM) intervention on Anxiety in the Elderly. Another study on the effect of Slow Stroke Back Massage (SSBM) on anxiety in type 2 diabetes mellitus patients also drew the same conclusion ( $p < 0.05$ ), meaning that there was an effect of giving SSBM on anxiety (Wulandari et al., 2020).

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Sekolah Tinggi Ilmu Kesehatan Cirebon  
Corresponding author: \*E-mail: lululubbnah@gmail.com

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Another study conducted on the anxiety level of Iranian women on the first day postpartum also supports the results of this study. Even though the subjects are not parents, the intervention produces a more relaxed body condition. In short, SSBM intervention is carried out for 20 minutes in a sitting position while the mother holds the baby, Vaseline and odorless ointment are chosen to make massage easier. The 50 primiparous mothers in the experimental group showed a better reaction, with a p-value  $<0.0001$  (Jahdi, Mehrabadi, Mortazavi, & Haghani, 2016).

### **CONCLUSION**

Elderly people used to experience sleep disturbances and anxiety due to several factors. This may lead to further health problems, both physically and psychologically. It can be concluded that in this study, the sleep quality of the subjects was better after being given the SSBM intervention, as well as the anxiety level was reduced. This study showed that the Slow Stroke Back Massage (SSBM) intervention is non-invasive, cost-effective, simple, and inexpensive to help reducing sleep problems and anxiety by stimulating the neurohormonal responses. As a result, relaxation can be achieved.

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Corresponding author: \*E-mail: lululubbnah@gmail.com

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