

Research Article

Effectiveness of the 30-Degree Lateral Sleeping Position on Sleep Quality in Elderly Individuals Post-Stroke

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ABSTRACT

Background: Post-stroke conditions can have an impact on the sleep quality of the elderly. Sleep disorders are a common health problem for the elderly, requiring serious attention. Poor sleep quality in the elderly is caused by increased sleep potential, reduced sleep efficiency, and early awakenings due to the ageing process.

Objective: This research aims to determine the effectiveness of a 30-degree lateral sleeping position compared to a supine sleeping position on the sleep quality of elderly individuals post-stroke.

Method: The design of this research uses a quasi-experiment design with a non-equivalent control group design approach. The study will be conducted in 2023 in Ekasari Village, Jembrana Regency, Bali. The total research population is 126 elderly individuals, and the sample size meeting the criteria is 64 respondents, divided into 32 respondents in the intervention group and 32 respondents in the control group. Data analysis in this study uses the Mann-Whitney U Test.

Results: The Mann-Whitney U Test shows a difference between the intervention and control groups ($p = 0.000$, Z score = -4.830), which means that the 30-degree lateral sleep position is better at helping older people who have had a stroke sleep better than the supine sleep position.

Conclusion: Post-stroke elderly individuals tend to experience an improvement in sleep quality when they sleep in the lateral position of 30 degrees. Therefore, elderly people who are having sleep quality issues can adopt this sleeping position to improve their sleep.

Keywords: Post-stroke elderly, Sleep position, Sleep quality, 30 degrees lateral

Introduction

Stroke is one of the largest degenerative diseases in the world that cannot be easily avoided, affecting both the young and the elderly. According to the World Health

Organisation's report, degenerative diseases like stroke are expected to continue increasing globally, especially in developing and impoverished countries. Stroke is a disruption of the blood supply to the brain that is typically due to

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blood vessel rupture or blockage from blood clots. This leads to a disturbance in the supply of oxygen and nutrients to the brain, resulting in damage to brain tissue [1]. Stroke is characterised by the rapid development of focal or global clinical signs, caused by disruptions in brain function. The symptoms occur within 24 hours or more and can potentially lead to death [2].

Every year, around 15 million people worldwide suffer from strokes, with 5 million of them succumbing to the condition, while the rest experience permanent disabilities, leaving a burden on families and communities. Stroke is also the second leading global cause of death after heart disease as of 2013 and the fifth leading cause of death in the United States, claiming approximately 129,000 lives each year [3]. The prevalence of stroke in Indonesia in 2018, based on doctor-diagnosed cases in the population aged 15 years and older, was 10.9%, estimated to be around 2,120,362 individuals. Over the past five years, there has been an increase of 3.9% in the prevalence of stroke [4]. In Bali, the number of stroke cases is reported to be 12,092 individuals. Stroke became the second-leading cause of death globally in 2015 and the highest cause of death in Indonesia in 2014. About 85% of stroke patients experience complications, with 51% of them succumbing within the first 30 days after the stroke. Post-stroke patients face various physical challenges, including weakness or paralysis on one side of the body (90%), difficulty walking or balance issues (16.43%), bathing difficulties (14.04%), eating challenges (3.39%), and urinary incontinence disorders (15-20%) [5]. The elderly require comprehensive support to navigate post-stroke conditions [6].

The post-stroke condition will impact the psychological well-being of the elderly [7]. One disrupted condition is the sleep quality of the elderly. Prolonged pre-stroke sleep is associated with a higher incidence of poor post-stroke sleep quality and lower scores for post-stroke quality of life and lifestyle [8]. The elderly frequently experience sleep disturbances, which requires serious attention. The poor quality of sleep in the elderly is attributed to an increased potential for sleep, reduced sleep efficiency, and waking up earlier due to the ageing process. The ageing process leads to a decline in function and a significant decrease marked by reduced stimuli [9]. The occurrence of poor sleep quality among the elderly in Indonesia is reported to reach 67%, making it a frequently emerging issue compared to other health concerns [10]. Self-reported poor sleep has a negative impact on functional recovery post-stroke [11].

One intervention offered is the adjustment of a lateral sleep position by 30 degrees. The lateral sleep position at 30 degrees involves lying on the side with a tilt angle of 30 degrees. Defloor conducted a study on ten different positions when patients were on the bed, and among these, it was found that the least pressure on the patient's body was exerted when positioned at a 30-degree angle. Positioning the patient at angles up to 90 degrees resulted in a dramatic reduction in oxygen supply to the trochanter area compared to patients positioned at 30 degrees. The lateral sleep position at 30 degrees allows for optimal oxygen circulation if consistently and continuously applied, preventing insufficient blood flow to the underlying tissues [12].

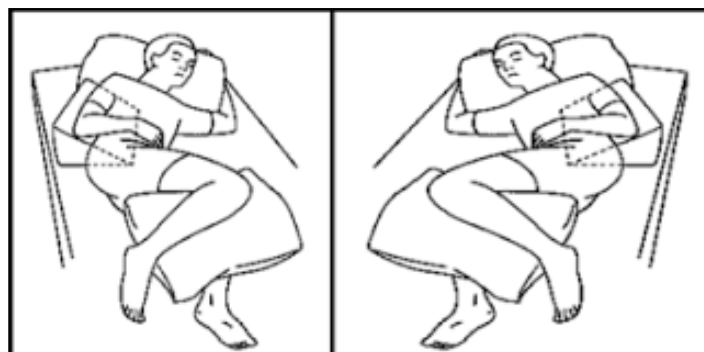


Figure 1. The 30-degree lateral sleep position [13]

An introductory study conducted in the village of Ekasari, Jembrana Regency, Bali in March 2023 gathered data on 126 elderly individuals experiencing post-stroke conditions. Sleep quality measurements were taken for 10 elderly individuals using the Pittsburgh Sleep Quality Index (PSQI) in Bahasa Indonesia, revealing that eight out of 10 elderly or 80% experienced poor sleep quality. These findings underscore the importance of researching the impact of the 30-degree lateral sleep position on the sleep quality of post-stroke elderly individuals in the village of Ekasari, Jembrana, Bali. The innovation in this study involves comparing the 30-degree lateral sleep position with the supine sleep position among post-stroke elderly individuals and its effects on their sleep quality.

Methods

Research Design

This study employed a Quasi-Experiment design with a Non-equivalent Control Group Design approach. The selection of this design aligns with the research objective of comparing sleep quality between the lateral 30-degree sleeping position and the supine sleeping position in elderly individuals post-stroke.

Research Location

The study was conducted in 2023 in Ekasari Village, Jembrana Regency, Bali.

Population and Sample

The research population comprised elderly individuals post-stroke in Ekasari Village, Jembrana Regency, Bali. Sampling was done using the Purposive Sampling technique with inclusion criteria, including elderly individuals experiencing post-stroke sleep disturbances, having reading and writing abilities, verbal communication skills, and no mental disorders while being cooperative. The total research population was 126 elderly individuals, and the sample size meeting the criteria was 64 respondents, divided into 32 respondents in the intervention group and 32 respondents in the control group.

Research Variables

The dependent variable in this research was the sleep quality of elderly individuals post-stroke. Sleep quality is measured using the Pittsburgh Sleep Quality Index (PSQI) in Bahasa Indonesia. The validity and reliability of the PSQI in Bahasa Indonesia have been tested, showing a content validity of 0.89, good construct validity, significant known group validity ($p < 0.001$), sensitivity of 1, specificity of 0.81, a cut-off point of 5, and internal consistency Cronbach Alpha = 0.79 [14].

The independent variable in this study was the 30-degree lateral sleep position. This sleep position is administered for 4 weeks in the intervention group, while the control group is given the supine sleep position during the same period.

Research Data

Primary data was collected from observational results using the PSQI instrument in Bahasa Indonesia.

Data Collection Procedure

The researcher collected data in two stages. Firstly, a pre-test examination was conducted before any intervention. Following that, the intervention group received the 30-degree lateral sleep position for 4 weeks, while the control group underwent the supine sleep position for the same duration. The process concluded with a post-test in the final week. Data collection was done using the Indonesian version of the PSQI by visiting the homes of each respondent.

Data Analysis

Data analysis involved the Wilcoxon Signed Rank Test to compare pre-test and post-test results, and the Mann Whitney U Test to compare the intervention and control groups, with a significance level of $p = 0.05$ [15].

Research Ethics

Research ethics in nursing is crucial due to its direct involvement with human subjects. Principles such as respecting individuals,

providing benefits, avoiding harm, and upholding justice are considered [16]. Prior to data collection, the research has undergone ethical review at the Health Research Ethics Committee of Universitas Triatma Mulya under number 031-KEPK.

Result and Discussion

The research results indicate that the average age of the respondents was 66.61 years, with the majority aged 65 years (23.4%). The gender distribution was predominantly female, accounting for 44 individuals (68.8%). The Wilcoxon Signed Rank Test analysis showed a significant difference between the pre-test and post-test in the intervention group ($p = 0.000$), while there was no difference in the control group ($p = 0.83$). The Mann-Whitney U Test showed a difference between the intervention and control groups ($p = 0.000$, Z score = -4.830), which means that the 30-degree lateral sleep position is better at helping older people who have had a stroke sleep better than the supine sleep position.

This study backs up earlier research that found that sleeping on your side at a 30-degree angle can affect the development of pressure ulcers in stroke patients. In the end, there were significant differences in the number of pressure ulcers in the treatment and control groups. The study concludes that there is an impact of the 30-degree lateral sleep position on the occurrence of pressure ulcers in stroke patients [12]. Another study looked at how the 30-degree lateral position and massage with Virgin Coconut Oil (VCO) affected the risk of skin integrity damage in stroke patients. They found that the risk of skin integrity damage in non-hemorrhagic stroke patients went down after 4 days of using the 30-degree lateral position and VCO massage twice a day. Another study looked at how different lateral positions (30° and 90°) affected the risk of pressure ulcers in people who were on total bed rest. The results showed that the 30-degree position had a higher average ranking score than the 90-degree position. This indicates that the application of the 30-degree lateral position is recommended for reducing the risk of pressure ulcers in total bed rest patients [17]. Another study on

supine sleep and positional sleep apnea after acute ischemic stroke and intracerebral haemorrhage found that the majority of subjects (66.7%) spent the entire sleep time in the supine position, and positional obstructive sleep apnea was clearly observed in 23.1% of other cases [18].

The 30-degree lateral sleep position is a lying position arranged at a 30-degree angle to the side. Defloor once examined ten different positions when patients were on the bed, and among these positions, it was found that the minimal pressure on the patient's body is achieved when positioned at a 30-degree lateral angle. When patients are positioned laterally up to 90 degrees, it causes dramatic damage to the oxygen supply in the trochanter area compared to patients positioned at a 30-degree lateral angle. The 30-degree lateral sleep position allows for good oxygen circulation when consistently and continuously applied, preventing insufficient blood flow to the underlying tissues [12]. In the 30-degree lateral sleep position, the body tends to form a comfortable angle with the surface of the bed. This helps reduce pressure on various parts of the body, such as the back, hips, and shoulders [19]. Therefore, this position can help reduce the risk of experiencing pain or discomfort that often occurs when we sleep in a flat or less supportive position [20]. Additionally, the 30-degree lateral sleep position can also support respiratory health. In this position, the airways tend to be more open, promoting smoother breathing. This may be particularly beneficial for those suffering from respiratory issues such as sleep apnea or allergies [21]. In addition to the physical benefits, the 30-degree lateral sleep position can also have a positive impact on digestion. It is known that this position can help prevent stomach acid from rising into the oesophagus, reducing the risk of acid reflux that can disrupt sound sleep [22].

Improving the sleep quality of elderly individuals post-stroke by adjusting the 30-degree lateral sleep position positively impacts their sleep comfort. This comfort arises due to increased blood flow to the brain, thereby improving oxygen circulation. Therefore, the 30-degree lateral position proves effective in

maintaining oxygen circulation within the appropriate limits during sleep, especially for elderly individuals with a history of stroke. This sleep position also aids in facilitating the initiation and waking up from sleep with a fresher feeling.

The study recommends future investigations to delve into the long-term effects of adopting the 30-degree lateral sleep position, compare its effectiveness with alternative interventions, and explore the influence of lifestyle factors on sleep quality. Additionally,

incorporating technology-assisted monitoring, patient-reported outcomes, and a multidisciplinary approach can enrich our understanding of the subject. The goal is not only to refine sleep interventions for elderly stroke survivors but also to pave the way for community-based initiatives that promote healthier sleep practices. This narrative encapsulates the journey of discovery and the potential avenues for further exploration in the quest to enhance the sleep comfort and overall well-being of elderly individuals post-stroke.

Table 1. Comparison between the intervention group and the control group

Group	N	p value	Z score
Intervention (The 30-degree lateral sleep position)	32	0,000	-4,830
Control (The supination position)	32		
Total	64		

Limitations

This study has limitations regarding other factors that influence sleep quality, such as sleep habits, sleep environment, and lifestyle, which should have been controlled for in this research.

Implications

The study's results highlighted that the 30-degree lateral sleep position could enhance sleep comfort in a group of elderly stroke patients. Consequently, healthcare practitioners, especially nurses, may consider incorporating this sleep position adjustment as part of their care interventions, bringing positive impacts to the patients' sleep experience.

Furthermore, the findings of this study call for further research into the relationship between sleep positions and sleep health, particularly in the elderly or individuals with specific health conditions. Alongside this, an increased understanding of this correlation is expected to guide healthcare practitioners in providing more focused and personalised care.

The success of this study may also pave the way for the development of more specific clinical guidelines. These guidelines can serve as a foundation for healthcare practitioners to deliver more personalised care, considering sleep positions as a crucial element in patient care strategies. The practical implications of this

research are not limited to clinical settings. The patient's family and the patient themselves can benefit from increased awareness of the importance of the 30-degree lateral sleep position. Consequently, it is hoped that patients can actively engage in their own care.

Overall, this research not only provides new insights into stroke patient care but also opens opportunities for further improvements in sleep health aspects. Through collaboration between healthcare practitioners, researchers, and patients, the results of this study can shape the future of more effective and comprehensive care for elderly individuals who have experienced a stroke.

Conclusion

This study found that sleeping in a 30-degree lateral position is more effective than sleeping in a supine position in improving the sleep quality of elderly individuals post-stroke. Post-stroke elderly individuals tend to experience an improvement in sleep quality when they sleep in the lateral position of 30 degrees. Therefore, elderly people with sleep quality issues can adopt this position to improve their sleep.

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