Sleep Hygiene And Insomnia On Stroke Patient During Pandemic, Pra-Experiment

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ABSTRACT

Insomnia is a sleep disorder that often occurs and its prevalence is increasing in stroke patients. Insomnia is associated with impaired sleep regulation due to damage to the parts of the central nervous system that regulate sleep. Sleep hygiene is an intervention that can improve sleep quality by avoiding things that disturb sleep such as adjusting sleep schedules, avoiding things that are not recommended before going to bed, relaxation and bedtime rituals. The purpose of this study was to determine the effect of sleep hygiene on insomnia in stroke patients. The method used was pra-experimental, with the accidental sampling method for 1 week and obtained 15 respondents by providing sleep hygiene interventions through educational videos and providing sleep records at the stroke outpatient polyclinic. Insomnia was measured using the Pittsburgh Sleep Quality Index (PSQI). The results of this study indicate that there is an effect of sleep hygiene interventions on insomnia in stroke patients, which means an increase in the quality of sleep of stroke patients. There was a significant improvement in quality sleep of stroke patient. The post score of quality of sleep were decrease. The average age of the respondents was 65 years, female, had comorbid hypertension and has been suffering from stroke for 5 years. Further research related to sleep hygiene needs to be carried out with other experimental methods and in combination with other interventions related to patient complaints such as pain and headaches.

Keywords: Sleep Hygiene, Insomnia, Stroke

INTRODUCTION

Stroke affects 795,000 people in the United States. Stroke is the second leading cause of death and the leading cause of disability. More than 6 million died and another 5 million were permanently disabled (WHO, 2018) . Meanwhile, stroke has increased from 2007 to 2013 in Indonesia. The Health Research and Development Agency through Basic Health Research (Kemenkes, 2013), estimated that there were 2,120,362 stroke sufferers in 2018. Furthermore, stroke was around 10.9% based on doctor's diagnosis, of which the highest number was 50, 2% suffered by patients aged > 75 years and 45.3% aged 65-74 years (Kemenkes RI, 2018).

Ischemic and hemorrhagic stroke patients had sleep problems which accounted for 42% severe sleep disturbances, 20% moderate and 16% mild levels totaling 200 people in the neurology clinic of the medical faculty of the University of Tuzla Bosnia & Herzegovina (Pasic, Smajlovic , Dostovic, Kojic, & Selmanovic, 2011). In line with a study on post-stroke patients after being hospitalized for the previous 3 months in a row, 36.6% of patients reported symptoms of insomnia while 12.6% reported symptoms of insomnia with daytime sleepiness (often feeling tired) (Chen, 2011). Stroke survivors with ongoing physical disabilities report worse sleep disturbances and experience greater daytime sleepiness. This is caused by changes in the abnormal shape of sleep waves in stroke patients, namely a decrease in slow waves, rapid eye movement (REM) and sleep-wake disorder. Meanwhile Research Salah et al (2013) states excessive sleepiness throughout the day with sleep symptoms apnea or fatigue caused by insomnia has a major influence on the patient's ability to follow the rehabilitation program that will be affect the functional ability of the patient and the prognosis of the attack second stroke. In various studies it is stated that sleep disturbances become risk factors for stroke.

The information obtained by the author through observations and interviews with patients and practitioners in hospitals when carrying out nursing care that stroke patients have sleep problems, plus the Covid-19 pandemic situation which adds to the fear of stroke patients. To overcome this problem the patient will be consulted to a doctor and given medication if he has severe sleep disturbances. Therefore, nurses play a role in providing nursing interventions for this sleep disorder problem. Sleep hygiene is one of the main behavioral interventions recommended to ensure poor sleep habits that do not interfere with the benefits of the effects of other interventions such as medication. Sleep hygiene has been shown to improve sleep

quality in post-stroke patients in the Australian New Zealand Clinical Trial Registry (Nguyen, 2018). Sleep Hygiene is beneficial in the ability to regulate sleep, change previous bad habits about what is recommended before going to bed, reduce previously experienced sleep disturbances and can improve sleep quality (Carney & Edinger, J. D, 2010).

Based on the background of this phenomenon, this paper aims to describe the effect of sleep hygiene on insomnia in stroke patients. So the importance of this writing can solve the problem of insomnia in stroke patients who will contribute to the field of nursing and become a reference for nurses who will be useful for hospitals in particular and society in general. This intervention adds knowledge and information so that nurses begin to innovate through technology in providing nursing care to stroke insomnia patients. Therefore, the urgency of the research is deemed necessary because the quality of nursing services is the ultimate goal of managing the insomnia problem of stroke patients which will impact the nursing care provided later. In fact, this intervention is expected to prevent further complications, improve the quality of life of patients and reduce the cost of care in this post-pandemic era.

METHOD

This research was conducted by the STIKes Binalita Sudama team who have obtained ethical approval with Number A/001/08/LPPM/STIKes/BSM/VII/202. All methods were performed in conformity with the relevant guidelines and standard recommendations.

This study is a quantitative study using a pra-experimental research design from 22 September to 30 September 2021, which is a design that involves a group by testing an intervention to determine the effect of sleep hygiene. on insomnia before and after the intervention. This research was conducted at the Regional Hospital of Medan City. The population in this study were all stroke patients in the outpatient polyclinic of Medan City Hospital, the Non-Probability Sampling method used was accidental sampling, so that 15 samples were obtained within 7 days. This research has obtained ethical approval from the ethics committee and obtained permission from the research and development unit at the hospital, the head of the outpatient polyclinic and the head of the polyneurology room.

The data collection procedure was taken in the outpatient poly room in the morning while the patient was waiting to be taken for anamnesis by the doctor. The researcher asked the patient's willingness to participate in this study by signing an informed consent. In this study, researchers selected stroke patients who met the inclusion criteria of outpatients at the Outpatient Polyclinic of Medan Hospital, did not use depressant drugs and sleeping pills, had a partner or family who cared for them, were cooperative, could use a smart phone, the patient has a private bed environment as a comfortable resting place. comfortable, quiet and clean. We further excluded participants who did not attend this study or complete the educational intervention, pre-test, and post-test.

Patients filled out a questionnaire distributed via the Google form which contained demographic data, an insomnia questionnaire (pre-test) with the Pittsburgh Sleep Quality index (PSQI). Respondents with a value of > 5 were declared to have sleep disorders. Then a video of Healthy Sleep Information (Sleep Hygiene) was given, followed by a discussion and questions and answers about 15 minutes. Respondents were directed to fill in a sleep diary in the morning and before starting the sleep program at night. Respondents will be monitored via whatsapp, telephone or video call and recorded in a sleep diary. Furthermore, on the eighth day an assessment of insomnia (post test) was carried out on the respondents.

Submitted responses were extracted from Google Forms to the Microsoft Excel ver. 2019 (Microsoft Corporation, Redmond, WA, USA) for further data processing and coding. Dichotomous data were presented as frequencies and proportions, whereas continuous data were presented based on data normality in mean ± standard deviation (SD) or median (interquartile range/IQR). The comparison between pre-test and post-test scores for insomnia was analyzed using the Wilcoxon signed-rank test due to the data's normality. All normalities were tested following the principle of the Shapiro-Wilk test. Furthermore, the data before and after the sleep hygiene intervention were analyzed using the one-sample T-test. A two-tailed p-value of less than 0.05 was considered statistically significant. All statistical analyzes were performed using SPSS software (SPSS Inc., Chicago, IL, USA)

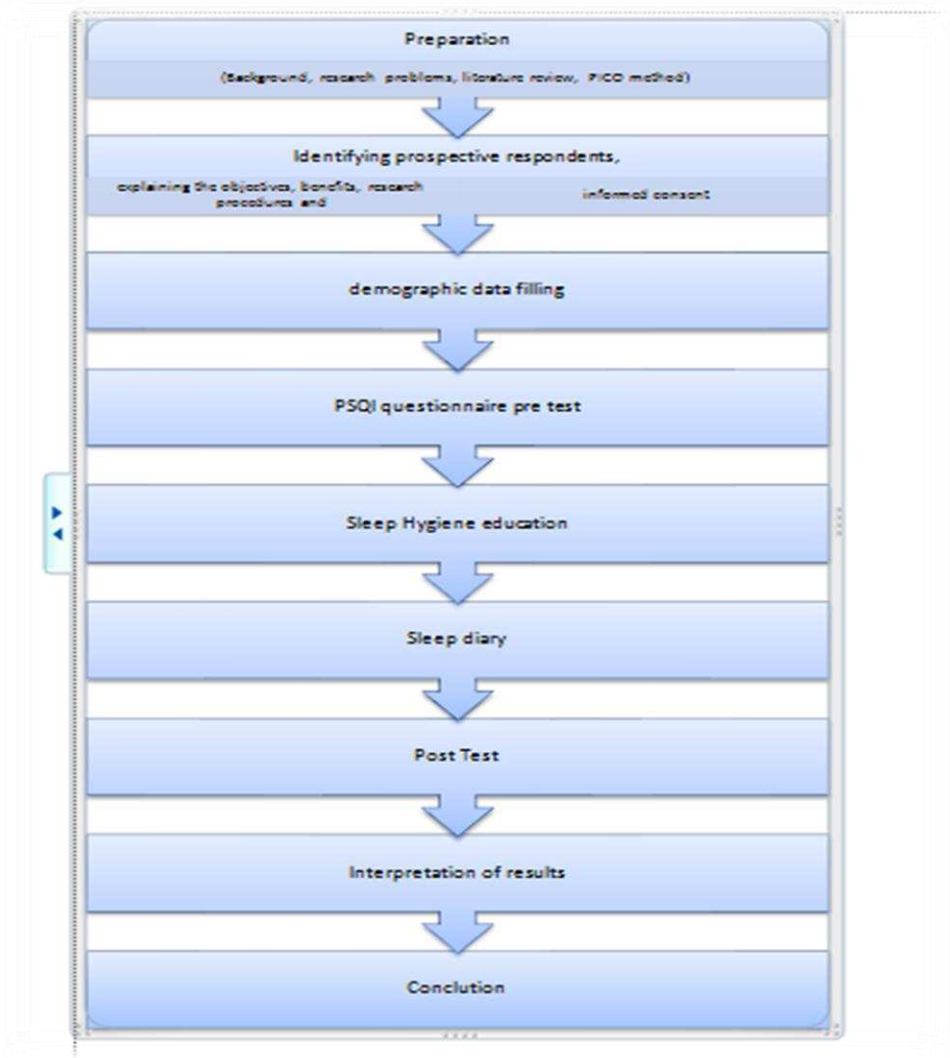

Figure 1. Research Flowchart

RESULTS

Characteristics of Respondents

A total of 15 participants who successfully met the eligibility criteria were included in this study. The average age of the respondents was 65 years (IQR; 33-81), 9 people (60%) were female, 6 people (40%) had comorbid hypertension and had an average stroke of 5 years (IQR 1- 11) . The detailed characteristics of the study participants are given in Table 1

Table-1 Characteristics of the study participants

	Variabel	Participants (n=15)	
a.	Age (years)	65 (33-81)	
b.	Gender		
	Man	6	(40)
	Woman	9	(60)
c.	Comorbidities		
	Hypertension	6	(40)
d.	Length of time suffering from stroke (years)	5 (1-11)	

The Wilcoxon signed-rank test was used for PSQI kuesioner. The comparison analysis between pre-test and post-test scores of the insomnia showed a significant difference (p=0.000). The scores and comparison results between pre-test and post-test are summarized in Table 2.

Table-2 Analysis of the Effect of Sleep Hygiene on Insomnia in stroke patients

Variabel Insomnia		Mean ±SD	Nilai p
Intervesi sleep Hygiene	Pre	11,30±3,169	0,0001*
	Post	10±2,478	

DISCUSSION

The average age of respondents is 65 years, this is different from data from the Ministry of Health (2018) which states that the age range of 55-64 years is the range where the most strokes occur at 3.3%. This might have happened because the respondents studied were only 1 week so that all stroke patients had not been described. Age is one of the factors that affect sleep disorders. The prevalence of insomnia increases with age. Yemina (2014) states that increasing age will have an impact of 51% on increasing the risk of insomnia. This is due to decreased body function at the age of> 40 years so that it affects the body's adaptation process to decrease sleep. In the endocrine system there is also decreased secretion of growth hormone, prolactin, thyroid and cortisol, especially during slow wave sleep. According to Perry & Potter (2014) an elderly person wakes up more often on night and need more time for them to do so back to sleep. The tendency to nap seems to be increasing increases with age due to frequent awakenings at night. This was also conveyed by respondents during the follow-up of the sleep hygiene intervention.

While the majority of respondents were women and suffered a stroke under 2 years. This is in line with research (Kim, 2017) which shows that insomnia sufferers are more common in

elderly and female patients. According to the researcher's assumption, this is because when conducting research, the time is limited to only 8 days so that it does not describe all stroke patients in Medan City Hospital.

Most of the respondents had comorbid hypertension. This is in accordance with another study from (Wajngarten & Silva, G.S, 2019) which states that hypertension is the most common risk factor for stroke sufferers. Some studies report that 64% of stroke patients have risk factors for hypertension (Feigen et al., 2016). Meanwhile, the relationship between post-stroke insomnia and depression, disability and fatigue is very large (Chen et al., 2011; Glozier et al., 2017; Leppavouri et al., 2002). Furthermore adults diagnosed with an anxiety disorder are statistically more likely to have one or more of the following self-reported comorbid conditions: obesity, diabetes mellitus, asthma, hypertension, arthritis and other musculoskeletal disorders, gastrointestinal disease, heart disease, chronic pain , and headaches which will exacerbate sleep disturbances (Scott et al., 2007). The severity of comorbidities can potentially cause conditions that interfere with sleep, such as pain in the nape of the neck when experiencing increased blood pressure and other complaints.

Insomnia Scale before Sleep Hygiene Intervention

The results of this study showed that the mean PSQI score of 15 stroke patients was 11.54 (SD 3.158). All respondents experienced insomnia with a minimum PSQI score of 7 and a maximum of 18. When referring to the PSQI interpretation, it can be seen that all respondents in this study have poor sleep quality. This is in line with the statement of Tang et al., (2015) insomnia is a common complaint in stroke survivors and early screening for sleep disorders will be beneficial to prevent further development of insomnia.

Insomnia is diagnostically defined as difficulty initiating/maintaining sleep, or waking up at least 3 nights per week for at least 3 months that affects daytime function (APA, 2013). When the authors conducted research, respondents stated that they had difficulty starting to sleep, often woke up at night and were sleepy when doing activities during the day, even one respondent stated that they had to sleep during the day to replace lack of sleep at night. This is in line with research (Sterr, 2018) statement that stroke sufferers have difficulty sleeping and

are sleepy during the day. Insomnia is caused by physiological and psychological factors of stroke and the mechanism of insomnia treatment. For example, one respondent rarely smiled and stated that his daughter-in-law did not want to take care of him, even the highest PSQI score of this respondent was 18. This indicates that there are psychological problems that trigger sleep disorders.

In addition to psychological problems, depression and fatigue commonly occur in stroke patients (Choi-Kwon & Kim, 2011). Fatigue was shown by one of the respondents while waiting in the waiting room of the Stroke Polyclinic, where the patient fell asleep while sitting with his head against the wall . Post-stroke insomnia occurs based on the location of the lesion and certain symptoms, such as supratentorial stroke reducing non-rapid eye movements (Non-Rapid Eye Movement), reducing total sleep time, and reducing sleep efficiency (Mims & Kirsch, 2016). Meanwhile, the majority of respondents who do not work generally experience a decrease in physical activity so that there is a reduction in sleep pressure (Sterr, 2018). This problem was stated by respondents who said that they were no longer working and going to the hospital was one of the entertaining activities at this time, because they could meet other people and chat.

The results showed that the average respondent answered that the duration of sleep was less than 5 hours, woke up at night because he wanted to go to the bathroom, and was sleepy during the day. One respondent even answered that he could not sleep, because of family problems that he was thinking about. Stroke patients who experience communication disorders, say it is difficult to convey what they feel If this sleep disorder is not intervened appropriately, it will certainly increase the severity of the disease that has been suffered. Whereas sleep is part of healing and repair (Mc Cance & Huether, 2018). Proper rest and sleep are as important as good nutrition and adequate exercise (Perry & Potter, 2014).

Insomnia Scale after Sleep Hygiene

Non-pharmacological interventions are suggested to improve the sleep quality of stroke patients (Tang, Grace Lau, Mok, & Ungvari, 2015). Good sleep quality has an impact on quality of life because adequate sleep can improve the mental condition and physical function of stroke

patients. Therefore, the authors provide sleep hygiene interventions in stroke patients. The results showed that the average value of insomnia in patients decreased with a p value of 0.0001 < 0.05, which means that there was a significant difference between insomnia before and after giving sleep hygiene, where the average PSQI value was 11.30 before the intervention and decreased to 10 with a value range of 7- 15 after the sleep hygiene intervention.

Respondents who have been given sleep hygiene information get healthy sleep information such as being recommended to relax before going to bed, making the room atmosphere as comfortable as possible, sleeping in a comfortable position, avoiding drinking a lot 2 hours before bed so as not to wake up because you want to go to the restroom. After receiving this information, respondents have started to reduce drinking before going to bed, doing relaxation such as deep breathing and light massage. Respondents stated that they have started to feel that they have started to avoid things that are recommended by sleep hygiene so that sleep becomes quality. A balance of impulses received from higher centers (e.g. thoughts), peripheral sensory receptors (e.g. sound or light stimulation), and the limbic or emotional system. When a person tries to sleep, they close their eyes and are in a comfortable position. Stimulation of the reticular activating system (RAS) is decreased. If the room is dark and quiet, the activation of the RAS will continue to decline. At some point, regional bulbar synchronizing (RBS) will take over, causing sleep (Perry & Potter, 2014).

Insomnia that is not resolved will have a significant impact on patient performance such as excessive daytime sleepiness, fatigue, memory and attention problems that often cause stress and depression. One of the sleep hygiene information is that respondents avoid not taking naps so that they get a better quality night's sleep. Sleep hygiene is the first line of therapy, supported by a comfortable bed environment, avoiding noise can reduce insomnia, and setting the time to start sleep and wake up (Alberti, 2012). Respondents verbally stated that there was a change after the bedtime ritual, namely a light back massage performed by the family. Respondents also tried not to take naps. Some respondents did an afternoon walk for 10 minutes, so that at night they felt tired and sleepy.

Effect of Sleep hygiene in insomnia

Sleep hygiene is a therapeutic approach based on the patient's lifestyle and environmental modifications to maximize sleep quality such as dimming the light. Sleep hygiene is part of CBT (Cognitive Behavior Therapy) for Insomnia (CBT-I), which is recommended as an initial treatment for sleep disorders that is psychologically designed to change maladaptive thought patterns and habits that cause insomnia (Espie, 2016)). Sleep hygiene is a therapy that is often used and effective (Redeker & Mcenany, 2011).

Sleep hygiene makes arrangements for a sleep schedule that is carried out jointly by the patient with the help of the family. Patients try to figure out together with the nurse the right rituals to do before going to bed. One respondent chose to do a gentle bedtime massage with her partner. The massage relaxes and increases blood flow throughout the body so that it creates a sense of comfort and the patient feels sleepy. This is further optimal with behavioral support and proper environmental conditioning before bedtime in accordance with Sleep hygiene. appropriate behavior and environmental conditioning before bedtime in accordance with Sleep hygiene. If the room is dark, quiet, has sleep hygiene, then the activation of the RAS will continue to decline. As a result, there is synchronization activity in the substantia ventrico reticularis medulla oblongata, so that patients fall asleep faster. So that finally the patient's sleep quality improves and the stroke healing process becomes optimal, and no recurrent stroke attacks occur.

CONCLUSSION

Insomnia occurred in all respondents. After being given the sleep hygiene intervention, the average insomnia decreased. This shows that there is an effect of sleep hygiene on reducing insomnia with a p value of $0.000 < 0.05$, which shows the effect of sleep hygiene intervention on insomnia in stroke patients with an increase in the quality of sleep of stroke patients. There are several activities that are recommended to do and not to do before going to sleep. The recommended activities include sleeping and waking up at the same time every day, using the bed only for rest, and optimizing activities during the day. While the activities that are not recommended are sleeping during the day, sleeping under stress, consumption of food and drinks containing caffeine, strenuous exercise 4 hours before bedtime, and using the internet

through devices while lying in bed. Sleep hygiene is also influenced by supportive environmental factors, such as the bedroom atmosphere, hot temperatures or the state of the mattress and pillows. In this study, there was no control group, so there was no control for extra variables that had a significant effect.

In this study, only interventions in the form of sleep hygiene, so that respondents' complaints such as headaches and leg pain have not been handled. Further research is suggested to do a combination of additional interventions for pain problems experienced by respondents.

ABBREVIATIONS

CBT-I : Cognitive Behavior Therapy for Insomnia

IQR : Interquartile range/IQR

PSQI : Pittsburgh Sleep Quality Index

RAS : Reticular activating system

RBS : Regional bulbar synchronizing

REM ; Rapid eye movement

SD: Standard deviation

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