

Position Head Up Towards Reduction of Blood Pressure in Non-Hemorrhagic Stroke Patients in The Inpatient Room of Harapan Insan Sendawar Hospital

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Abstract

Introduction: position Head up 30° is a position given to stroke patients to improve blood flow to the heart, brain and maximize cerebral tissue oxygenation. **Objective:** This study aims to determine the effect of head up 30° to decrease blood pressure in non-hemorrhagic stroke patients. **Methods:** research quasi-experimental approach pre and post without control. The population is 32 people. The sample is 15 people using accidental sampling technique. The research site is in HIS Hospital. The instruments used are SOP, sphygmomanometer, and observation sheet. Collecting data obtained from primary data. Data were analyzed bivariately using paired sample t statistic test. **Results and Discussion:** The results of the statistical test paired t sample p value are $0.000 < 0.05$, which means H_a is accepted that there is an effect of giving a head-up to the decrease in blood pressure of stroke patients in the inpatient room at Harapan Insan Sendawar Hospital. **Conclusion:** There is an effect of giving a head up on the blood pressure of stroke patients at Harapan Insan Sendawar Hospital. It is recommended for the hospital to intervene in a head up in stroke patients.

Keywords: Head Up 30°; Stroke; Blood Pressure;

Introduction

Stroke is defined as a disruption of blood supply to the brain which is usually caused by a blockage by a blood clot (Puspitasari, 2020). This causes disruption of oxygen and nutrient supply in the brain resulting in damage to brain tissue (WHO, 2016).

Stroke is the third leading cause of death and the number one cause of disability worldwide, as many as 80-85% are non-hemorrhagic strokes (Hafid, 2014). In many parts of the world, the proportion of the population surviving to the age of 50 and 60 is increasing. This trend will have a huge effect on the demographic structure of society. The global population over 65 years old is increasing by 9 million a year, and by 2025 there will be more than 800 million people over 65 years old in the world (Ekacahyaningtyas et al., 2017). This has an effect on increasing vascular cerebro disease, one of which is stroke (WHO 2016).

The number of stroke sufferers in Indonesia ranked first as the most countries experiencing stroke in all of Asia. The prevalence of stroke in Indonesia reaches 8.3 out of 1000 population. This prevalence rate increases with increasing age. Indonesian national data shows that stroke is the highest cause of death, which is 15.4%. There are around 750,000 incidents of stroke per year in Indonesia, and 200,000 of them are recurrent strokes (Despitasi, 2020)

Based on basic health research data in 2018, the prevalence of stroke in East Kalimantan Province was (14.1%). The prevalence of stroke also increases with age. The highest stroke cases are aged 65-74 years and over (22.7%) (Ministry of Health, 2018). Data on stroke patients in 2021 48 patients were hospitalized at Harapan Insan Sendawar Hospital.

A stroke or brain attack is a form of neurological damage caused by an abnormal blockage of blood to the brain. Two types of strokes are hemorrhagic stroke and non-hemorrhagic stroke. Non-hemorrhagic stroke is a stroke caused by cerebral circulatory disorders in the form of blockages that cause hypoxia in the brain and no bleeding occurs (AHA, 2015) in (Khairy & Milkhatun, 2019)

Non-Hemorrhagic Stroke, usually known as Ischemic Stroke, is a stroke caused by a decrease in brain function caused by impaired blood supply to parts of the brain that is not smooth and even hampered due to blockage or narrowing of blood vessels (Tamburian, 2020).

Some non-hemorrhagic strokes occur in the hemispheres of the brain, although some occur in the cerebellum or brainstem. Some non-hemorrhagic strokes in the hemisphere appear to be mild (about 20% of all non-hemorrhagic strokes) these strokes are asymptomatic, this occurs in about one-third of patients who are elderly or only cause mild weakness or memory problems (NUR ANGGRAINI, 2020). However, multiple, and repeated mild strokes can cause severe disability, cognitive decline, and dementia (Irfan, 2012).

Poor blood flow in stroke patients results in hemodynamic disturbances including oxygen saturation. Therefore, proper monitoring and handling is needed because hemodynamic conditions greatly affect the function of oxygen delivery in the body which

will ultimately affect heart function. Giving a *head up* position of 30° in stroke patients has great benefits, namely it can improve hemodynamic conditions by facilitating increased blood flow to the cerebral and maximizing cerebral tissue oxygenation (Fitriyah, 2018)

The effect of 30° *head up* action on MAP is influenced by many factors because it is measured using the results of the patient's blood pressure [MAP = systolic + diastolic] (Pawestri, 2019). These factors include drug factors, history of hypertension, anxiety, and other nonpharmacological techniques. According to Smeltzer (2014) in Olviani (2015) states that MAP must be maintained above 60 mmHg to ensure perfusion to the brain, perfusion of the coronarian artery and perfusion to the kidneys is maintained during the *head up* position. Decreased intracranial increase by adjusting the *head up position* by 30 degrees to increase venous drainage from the cerebral to the heart. The 30° *head up* position is safe. In addition, the 30° *head up* position is expected to have venous retrun (backflow) to the heart to run more optimally so as to reduce intracerebral edema due to bleeding (Supadi, 2017)

Changes in systole and diastole will also affect the *Mean Artery Pressure* value of head injury patients. The results of Nayduch's research (2014) said there was a significant influence between giving a *head up* position of 30° to MAP with a value of $p = 0.00$. Keeping the head position with a height of about 30° can reduce jugular venous pressure, decrease ICT and stating that the *head up* position of 30° is very effective in reducing ICP with CPP stability maintained.

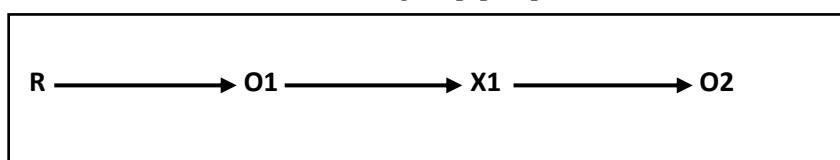
In line with research conducted by Supadi (2011) that there is a significant influence of head position elevation in hemorrhagic stroke patients on the value of *Mean Artery Pressure*, blood pressure and intracranial pressure. The reverse system regulates blood pressure in blood vessels; this system is controlled by vasomotor in the cardiovascular center. Vasomotor controls peripheral blood vessels and visceral constriction. In this part what works is not only the blood pressure response but responds to changes in blood perfusion in the medull oblongata.

Method

The research design used in this study was *quasi-experimental*. With a *pre and post test without control* approach. In this design, observation was carried out 2 times, namely before the experiment and after the *experiment*. This plan has no comparison group (control), but at least the first observation (pre-test) has been carried out which helps the study can test the changes that occur after the intervention (*post-test*). The purpose of this study is to determine the influence arising from the treatment given. The form of this design is as follows.

Chart 1

Scheme desain research *one group pre post test without control*



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Information:

R : Respondent studies all received

O1 : Pre test in the perklaku group

O2 : Post test after treatment X

I : Trial/intervention in the treatment group according to protocol treatment/intervention

Theopulation of this study was that all stroke patients in the inpatient room at Harapan Insan Sendawar Hospital were as many as 32 patients. In this study still considered between exclusion and inclusion criteria, while the bias factor in this study was not controlled. In this study, sample big data obtained by the sampling formula from the population was selected and then obtained samples from the Federer formula as follows:

$$(n-1) (t-1) \geq 15$$

Information:

N : Number of samples

Q : Number of groups

$$(n-1) (t-1) \geq 15$$

$$(n-1) (t-1) \geq 15$$

$$\text{No.} \geq 15$$

From the calculation of the formula above, the result is 15, then the determination of the sample of respondents in this study is as many as 15 people. This research was carried out in March-May 2022, conducted in the inpatient room of Harapan Insan Sendawar Hospital.

Analyzes Univariat

Univariate analysis aims to explain the characteristics of each variable studied so that the data set turns into useful information. To conduct univariate data analysis, frequency distribution with percentage size or proportion Notoatmodjo, (2015) is used.

$$p = \frac{f}{n} \times 100\%$$

Information:

p = presentasi

f = frequency of respondents

n = number of samples

Bivariate Analysis

The data analysis carried out was bivariate analysis using paired t test (*paired sample t test*). Previously, *paired t test samples* must meet the requirements, namely normal or symmetric distributed data, both groups of independent data, variables that are

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connected in numerical or categorical form (Sabri and Hastono, 2010). The formula performed for *paired sample t test* is:

$$T = \frac{d}{SD_d / \sqrt{n}}$$

Information

D = mean deviation/ difference between sample 1 and sample 2

SD_d = standard deviation of sample deviations 1 and 2

Test results with a meaning level of 95% or $\alpha = 0.05$, namely:

- If the *p value* < 0.05, then the accepted hypothesis means that there is an influence of the *Head Up* position of 30° on blood pressure in stroke patients in the Inpatient Room of Harapan Insan Sendawar Hospital.
- If the *p value* > 0.05, then the hypothesis is rejected which means there is no effect of the *Head Up* position of 30° on blood pressure in stroke patients in the Inpatient Room of Harapan Insan Sendawar Hospital.

An alternative to data analysis if the data is abnormally distributed is to use the *Wilcoxon test*.

Results and Discussion

1. Characteristics of Respondents

Respondents' characteristics included age, gender, education, history of illness and medical diagnoses. Obtained characteristics of respondents almost half of respondents aged > 55 years amounted to 6 (40%) people, some of 8 (53.3%) respondents were male, some of 8 (53.4%) respondents with recent high school education, all 15 (100%) respondents with a medical diagnosis of non-hemorrhagic stroke, and half of 8 (53.3%) respondents with a history of hypertension.

2. Blood pressure before being given a head up position of 30° in stroke patients at Harapan Insan Sendawar Hospital

Blood pressure before being given a *head up* position of 30° in stroke patients at Harapan Insan Sendawar Hospital can be seen in the following table:

Tabel 1

Blood pressure before being given a *head up* position of 30° in stroke patients at Harapan Insan Sendawar Hospital

Variable	Measurement	MEAN	SD	Min-Max	95% CI
Blood pressure					
TD Sistol	Pre	174.00	21.230	140-210	162.24-185.76
TD Diastol		98.00	13.735	80-130	

Source: Primary Data, 2022

Based on the table, the average blood pressure before the head up position intervention was given to stroke patients at Harapan Insan Sendawar Hospital, namely systole blood pressure 174.00 while diastole blood pressure 98.00.

3. Blood distribution after being given a 30° head up position intervention in stroke patients at Harapan Insan Sendawar Hospital

Blood pressure after being given a 30° head up position intervention in stroke patients at Harapan Insan Sendawar Hospital can be seen in the following table:

Table 2

Blood pressure after being given a head up position of 30° in stroke patients at Harapan Insan Sendawar Hospital

Variable	Measurement	MEAN	SD	Min-Max	95% CI
Blood pressure					
TD Sistol	Post	160.33	23.790	130-200	147.16-173.51
TD Diastol		90.67	10.834	80-110	84.67-96.67

Source: Primary Data, 2022

Based on table 2, the average blood pressure after the 30° head up position intervention was given to stroke patients at Harapan Insan Sendawar Hospital, namely systole blood pressure 160.33 while diastole blood pressure 90.67.

4. The effect of 30° head up position on blood pressure in stroke case in at Harapan Insan Sendawar Hospital.

Before the paired *sample t* test analysis must be carried out a normality test using the *Shapiro wilk* test obtained as follows:

Tabel 3

Normality test before and after 30° head up position intervention in stroke patients at Harapan Insan Sendawar Hospital

Variable	Measurement	<i>p</i>	Information
TD Sistol	Pre	0,608	Normal
TD Diastol	Pre	0,078	Normal
TD sistol	Post	0,221	Normal
TD diastole	post	0,083	Normal

Based on table 3, the significance for blood pressure before and after the intervention of the 30° head up position in stroke patients was entirely greater (>0.05) so that the data were normally distributed, which means paired *t* test requirements (*paired sample t test*). The results of the analysis of the effect of 30° head up position on blood pressure in stroke patients at Harapan Insan Sendawar Hospital can be seen in the following table:

Tabel 4

The Effect of 30° Head Up Position on Blood Pressure in Stroke Patients at Harapan Insan Sendawar Hospital

Variable	Measurement	SD	Different mean	P
TD Sistol	Pre Post	10.933	13.667	0,000
TD Diastol	Pre Post	6.230	7.333	0,000

Source: Primary Data, 2022

After the intervention of the head up position of 30 ° for 30 minutes, the results obtained based on table 4.5 obtained the difference in mean before and after giving the head up position of 30 ° on systole blood pressure of 13,667 and p value of $0.000 < 0.05$ which means that H_a is accepted that there is an influence that gives the head up position 30° against the blood pressure of stroke patients at Harapan Insan Sendawar Hospital.

Discussion

1. Characteristics of stroke patients based on age, gender, education, history of hypertension

The characteristics of respondents in the study included age, gender, education, medical diagnosis, and history of disease. In this study, the characteristics of respondents were obtained, namely stroke sufferers were most found in the age range of > 55 years as many as 6 (40%) and the age range of 36-45 years as many as (33.3%), respondents who were male as many as 8 (53.3%) and those who were female as many as 7 (46.7%) respondents, most respondents received education to college as many as 8 respondents (53.4%), and respondents who had a history of hypertension as many as 8 respondents (53.3%).

Based on the results of this study, it shows that stroke patients are most found in the age range of > 55 years as much as 6 (40%) and the age range of 36-45 years as much as 4 (33.3%). Age is one of the factors in the occurrence of stroke, the increasing age of a person, the risk of stroke increases. In line with research by Dinata (2013) which shows that more than 50% of stroke sufferers are aged > 50 years. The risk of stroke increases after 45 years. Upon reaching age 50, each additional age of 3 years increases the risk of stroke by 11-20%.

Researchers assume that the increased risk of stroke at the age of 45 years and over or at the age of >55 years can also be caused by a history of hypertension (hypertension can be due to heredity and mindset of respondents or many things that are thought to cause blood pressure to rise), consumption of foods high in salt and fat (unhealthy diet), and smoking habits in respondents.

Based on this study, from 15 non-hemorrhagic stroke patients with male sex as many as 8 patients (53.3%) and female non-hemorrhagic stroke patients as many as 7 patients (46.7%). In accordance with the theory, men have higher risk factors for stroke than women. However, in women who use oral contraceptives that contain high estrogen

levels, the risk of stroke is increasing. Meanwhile, after menopausal women start, the incidence of stroke is almost the same as men (Hatler, 2016) in (Tamba, 2019). In line with research (Laily, 2017) the incidence of stroke is more experienced by men than women, a ratio of about 3:1 can be done, except in old age, men and women the incidence of stroke is almost no difference.

Men who are 45 years old and can survive to the age of 85 years are likely to have a stroke about 25%, while for women only 20%. In men it is more likely to have a non-hemorrhagic (ischemic) type of stroke, while in women it is more likely to have a hemorrhagic type of stroke and mortality is 2 times higher than men. According to researchers, the incidence of stroke is experienced by more men than women due to smoking. In addition, occupational factors also affect the occurrence of stroke, more experienced by men.

Based on the results of this study, it was found that the percentage of non-hemorrhagic stroke in patients with a history of hypertension was 8 (53.3%). This is in accordance with the theory that someone aged > 55 years is at greater risk of suffering a non-hemorrhagic stroke, according to the theory that if blood pressure rises high enough for months or years, it will cause hyalinization of the muscle layer of cerebral vessels which will result in the diameter of the lumen of blood vessels will become fixed.

This is dangerous because cerebral vessels cannot dilate or constrict freely to cope with fluctuations in systemic blood pressure. If there is a decrease in systemic blood pressure, the perfusion pressure to the brain is inadequate, which will result in cerebral ischemic. Conversely, if there is an increase in systemic blood pressure, the perfusion pressure on the capillary walls becomes high which results in hyperemia, edema, and possible bleeding in the brain (Sofyan et al., 2012). With the existing data, the incidence of ischemic stroke is greater than the incidence of hemorrhagic stroke.

Previous research conducted by Khoiratunnisa (2017) that a risk factor proven to be associated with the incidence of stroke is hypertension. Researchers assume that blood pressure is one of the factors that must be considered in stroke.

2. Bloodpressure before giving a 30° head up position to stroke patients in the Inpatient Room of Harapan Insan Sendawar Hospital

Based on the results of this study, blood pressure before intervention obtained the average mean value of systole blood pressure was 174.00 while the diastole value was 98.00. Risk factors for stroke are hypertension because it can increase the risk of stroke by 6 times. The occurrence of hypertension can damage the walls of blood vessels which can easily cause blockage and even rupture of blood vessels in the brain. The presence of hemorrhage in brain tissue causes disruption of circulation in the brain which results in ischemic in brain tissue because blood supply to the brain decreases.

According to Sudoyo (2013), non-hemorrhagic stroke is a type of stroke caused by grafting of brain blood vessels which then causes the cessation of oxygen and glucose supply to the brain. Hypertensive disease is a major risk factor for stroke, which is often referred to as *the silent killer* because hypertension increases the risk of stroke by 6 times.

It is said to be hypertension if it has a blood pressure of more than 140/90 mmHg. The higher the blood pressure the patient ate, the higher the risk for having a stroke. The incidence of hypertension can damage the walls of blood vessels which can easily cause blockage and even rupture of blood vessels in the brain (Junaidi, 2011).

According to non-hemorrhagic stroke researchers, ischemic stroke is known to occur due to brain thrombosis (thickening of the artery wall), embolism (sudden blockage) and other factors. Several efforts were made to improve blood circulation in stroke patients, one of which was the *head up* position of 30°.

3. Bloodpressure after giving a 30° head up position to stroke patients in the Inpatient Room of Harapan Insan Sendawar Hospital

Based on the results of this study, blood pressure after giving a *head up* position of 30° obtained a mean systole value of 160.33 while a diastole value of 90.67. The theory of head position is the elevation of the limbs above the heart with the vertical axis, will cause spinal cerebro fluid (CSS) to be distributed from the cranial to the spinal subarachnoid space and facilitate cerebral venus return (Sunardi, 2011).

According to Arafat (2016), there are 85% of patients experiencing complications after stroke and 51% of them die in the first 30 days after stroke due to immobility. Good head up mobilization and change are a major aspect in the care of stroke patients. If the position given to stroke patients in the acute phase is appropriate, it will improve recovery and reduce disability significantly, according to the results of a study conducted by Munoz in 2015 at *the Acute Stroke Unite, Study hospital*.

This study is also supported by the results of research conducted by Siti (2014), in her title, namely the comparison of head up positions of 15° and 30° on blood pressure, pulse and respiration in patients who experience changes. In patients with severe head injury, hypotension can increase mortality, while in head injury hypertension can also lead to death, *head up* position 30° recommended according to previous studies, which can decrease ICT and increase pressure from cerebral perfusion compared to supine position. Performed on patients with head injuries because this position will lower intracranial, Mahfoud (2015).

In line with research by Martina Ekacahyaningtyas, et al (2017) mentioned that stroke patients are more women, which is 56.7%. The American Heart Association (AHA) estimates that strokes are more common among women than 60,000 more men each year. The large number of women in the incidence of stroke occurs after the age reaches menopause. Increased risk factors for stroke in women occur due to excess androgen levels and vice versa decreased estrogen levels. In this study, it was found that there was an increase in the average value of oxygen saturation after the intervention (before positioning 97.07% and after positioning 98.33%). Researchers assume that emergency management in stroke patients needs to be done head up position because this position can launch the circulation of blood vessels that carry oxygen to the brain. So, it can lower blood pressure.

4. The effect of giving a 30° head up *head up* position to stroke patients in the Inpatient Room of Harapan Insan Sendawar Hospital

Based on the results of the study above, it shows that the mean value of the pre-post test with a difference in the mean value is 13.667. While the result of the mean value of diastole blood pressure is 7,333. From the results of the paired t-test, namely the *p-value* of 0.000 (<0.05), it means that there is a significant effect of *the head up* position of 30° on blood pressure in stroke patients. One of the emergency treatments for stroke patients is to control the increase in ICT, namely by providing a *head up* position. The theory underlying this elevation is that the elevation of the limbs above the heart with the vertical axis, will cause spinal cerebro fluid to be distributed from the cranial to the spinal subarachnoid space and facilitate cerebral venous return (Afif, 2015).

According to Waluyome (2017) said that the provision of a 30° *head up* position, that is, at first the person who had a stroke was laid on his back, the head propped up by a pillow formed an elevation angle of 30°, this position made the blood flow back downward, which is about 30 minutes, then taken to the hospital according to the Indonesian Neurologist. The head position can be performed on various groups of acute strokes (ischemic 85% and hemorrhagic). Head up position intervention evaluation process 30° in relation to the problem of non-hemorrhagic stroke, nursing action planning is focused on the problem of ineffective cerebral perfusion risk which is very likely to be disrupted. So, in its implementation, it is expected that after intervention in the form of head elevation or head *up* 30°, cerebral perfusion in hemorrhagic stroke patients increases. (Hasan, 2018).

In line with Afif's research (2015) which conducted research on giving head up positions can reduce ICT increases, this can be proven by a decrease in blood pressure, a decrease in MAP, reduced pain complaints. Researchers assume that giving a 30° *head up* position can lower blood pressure and improve heart backflow in addition to improving recovery and reducing significant disability in stroke survivors.

Research limitations

Research has been attempted to be carried out in accordance with scientific procedures, but nevertheless still has limitations. In addition, the number of samples in this study was small and this study was carried out in one place and was limited.

Conclusion

The conclusion of this study is that there is a significant effect of *head up* position 30° on blood pressure in stroke patients.

Reference

- Despitassari, L. (2020). Hubungan Hipertensi Dengan Kejadian Stroke Berulang Pada Penderita Pasca Stroke. *MIDWINERSLION: Jurnal Kesehatan STIKes Buleleng*, 5(1), 124–131.
- Ekacahyaningtyas, M. Rizqiea, N. S. (2017). Posisi Head Up 30 sebagai Upaya untuk Meningkatkan Saturasi Oksigen pada Pasien Stroke Hemoragik dan Non Hemoragik. *Adi Husada Nursing Journal*, 3(2), 55–59.
- Fitriyah, S. H. (2018). *Analisis Posisi Head Up Terhadap Nilai Saturasi Oksigen Pada Pasien CVA (Cerebrovascular Accident) di Ruang ICU Rumah Sakit Islam Darus Syifa* Surabaya. Universitas Muhammadiyah Surabaya.
- Hafid, M. A. (2014). Hubungan Riwayat Hipertensi Dengan Kejadian Stroke Di Rsup Dr. Wahidin Sudirohusodo Makassar 2012. *Jurnal Kesehatan*, 7(1).
- Khairy, A. S., & Milkhatun, M. (2019). *Analisis Praktik Klinik Keperawatan pada Pasien Stroke Non Hemoragik dengan Intervensi Inovasi Latihan Activity Daily Living (ADL) Terhadap Peningkatan Kemandirian Pasien di Ruang Stroke Centre AFI RSUD Abdul Wahab Sjahranie Samarinda Tahun 2018*.
- Laily, S. R. (2017). Hubungan karakteristik penderita dan hipertensi dengan kejadian stroke iskemik. *Jurnal Berkala Epidemiologi*, 5(1), 48–59.
- NUR ANGGRAINI, A. (2020). *ASUHAN KEPERAWATAN PADA PASIEN DEWASA PENDERITA STROKE NON HEMORAGIK DENGAN MASALAH KEPERAWATAN GANGGUAN KOMUNIKASI VERBAL*. Universitas Muhammadiyah Ponorogo.
- Pawestri, D. W. (2019). HEAD UP 30o UNTUK MEMPERBAIKI MEAN ARTERIAL PRESSURE PADA PASIEN CIDERA KEPALA. *PROSIDING SEMINAR NASIONAL*, 8–20.
- Puspitasari, P. N. (2020). Hubungan Hipertensi Terhadap Kejadian Stroke. *Jurnal Ilmiah Kesehatan Sandi Husada*, 12(2), 922–926. <https://doi.org/10.35816/jiskh.v12i2.435>
- Sofyan, A. M. Hamra, Y. (2012). Hubungan umur, jenis kelamin, dan hipertensi dengan kejadian stroke. *Medula: Jurnal Ilmiah Fakultas Kedokteran Universitas Halu Oleo*, 1(1), 152226.
- Supadi, S. (2017). Pengaruh Elevasi Posisi Kepala Pada Klien Stroke Hemoragik Terhadap Tekanan Rata-Rata Arterial, Tekanan Darah Dan Tekanan Intra Kranial Di Rumah Sakit Margono Soekarjo Purwokerto Tahun 2011. *Kesmas Indonesia*, 5(2), 154–168.

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Tamba, M. M. H. (2019). Gambaran Karakteristik Penyakit Stroke Rawat Inap Di Rumah Sakit Santa Elisabeth Medan Tahun 2018. *Skripsi, Ilmu Kesehatan Elisabeth. Medan.*

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