

Analysis of Factors Affecting Compliance of Ischemia Stroke Patients in Following the Treatment Programme

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Article Info

Article History:

Received, 16 January 2024

Accepted, 22 June 2024

Published, 30 June 2024

Keywords:

adherence, ischaemia
stroke, medication

Abstract

Stroke occupies the first place as the deadliest disease in Indonesia. The data on the number of ischaemia stroke patients is 1117. There are approximately 104 patients who do not make a return visit after being discharged from the hospital. The purpose of this study was to determine the factors that influence patient compliance with the treatment Programme me in outpatients with stroke. This study is a quantitative study with a cross-sectional research design. The sample determination in this study used a total sampling of the average number of patient visits for 3 months. The number of samples taken was 63. The statistical tests used in this study were the chi-square test and the logistic regression test. Based on the results of the multivariate test, the variables that influence compliance with the treatment Programme me for patients with ischaemia stroke are trust in health workers with a p-value of 0.000, family support with a p-value of 0.000, and self-efficacy with a p-value of 0.001. The conclusion of this study is that trust in health workers, family support, and self-efficacy greatly affect the treatment Programme me of patients with ischaemic stroke. The author hopes that families and health workers can provide good support and understanding to patients in following the existing treatment Programme me.

Background

Stroke occupies first place as the deadliest disease in Indonesia (WHO, 2020). Based on the latest data from WHO (2020), Indonesia occupies the country with the highest stroke death rate, which is 11th (WHO, 2020). Indonesia ranks first as the country with the most stroke cases in Asia. Based on WHO (2020) as many as 357. 183 deaths occurred due to stroke in Indonesia. Based on data from the World Stroke Organization in 2022, the incidence of stroke in the age range of 15 to < 70 years is 12.2 million, and approximately 62% of the stroke incidence is ischemic stroke (WHO, 2022). There are approximately 7.6 million new cases of ischemic stroke every year. The 2018 risk factor data in NTT province was 26.59% of 28,430 stroke patients who did not undergo a re-examination. There were 1137 cases of stroke at the S. K. Lerik Hospital, Kupang City, in 2022. As many as 92%, or approximately 104 patients, did not make a return visit after being discharged from the hospital.

Stroke patients' global adherence to medication is very low, with a non-adherence rate of 33%–50% from 135,000 respondents, even lower than in stroke patients at the Asian level (Fan et al., 2022). Stroke patients' global adherence to medication is very low, with a non-adherence rate of 33%–50% from 135,000 respondents, even lower than in stroke patients at the Asian level (Fan et al., 2022). Non-compliance among Asian stroke patients is 34.7%–81.8% of the 77,000 respondents. Non-compliance with the stroke treatment programme provided can result in a slowdown in healing, even the occurrence of a re-attack of the stroke.

Stroke patients' global adherence to medication is very low, with a non-adherence rate of 33%–50% from 135,000 respondents, even lower than in stroke patients at the Asian level. Non-compliance among Asian stroke patients is 34.7%–81.8% of the 77,000 respondents. Non-compliance with the stroke treatment programme, provided can result in a slowdown in healing, even the occurrence of a re-attack of the stroke. Patients with high medication adherence have a higher risk of stroke recurrence than patients with low medication adherence (Yeo et al., 2020). Poor adherence to anti-thrombotic treatment increases the risk of recurrent stroke and mortality in patients after the first ischemic stroke. Based on research from (Shani et al., 2021) factors that can affect patient compliance with the treatment programme are the amount of income, expensive drug prices, communication with health workers, trust in health workers, age, gender, and trust in the effects of drugs.

The characteristics of stroke patients can also affect the level of patient compliance when undergoing the treatment process (Wardhani & Martini, 2015). The role of the family is very important in the patient's compliance with the given treatment programme. Family support in the form of reminding the patient to take medication has been proven to increase patient compliance while undergoing treatment. Based on the above background, the researcher collected information related to "Factors Affecting Compliance in Following the Treatment programme in Outpatients with Ischemic Stroke." This study will provide input for both hospital institutions and nurses to improve the health status of ischemic stroke outpatients. The purpose of the study is to find out the factors that affect compliance with following the treatment programme in ischemic stroke outpatient patients at S.K.Lerik Hospital, Kupang City.

Methods

The type of research used for this study is quantitative research with a descriptive research method. The research design used is *cross-sectional*. The population in this study is 63 people, based on the number of patients who visited the hospital in January–March 2023. The sampling in this study is *total sampling*.

The research was conducted at the S. K. Lerik Regional General Hospital, Kupang City, in May–June 2023. The measuring tool used in this study was a questionnaire. There are four types of questionnaires used in this study. The first questionnaire is *the General Self-Efficacy Scale (6)*. The GSE questionnaire is a questionnaire used to assess self-efficacy, developed by Schwarzer, R., and Jerusalem, M. (1995). The GSE questionnaire consists of 10 questions (R. & M., 1995). The GSE questionnaire used in this study is a GSE-6 questionnaire consisting of six questions that are simplified from the GSE questionnaire and have passed the validity and reliability tests that have been carried out by Kurzform et al. (2013). The total score of the questions was 24; the higher the results obtained, the higher the self-efficacy. The second questionnaire is *the Trust in Physician Scale*. The TiPS questionnaire, developed by Anderson and Dedrick (1990), is a measuring tool to measure patient confidence in health workers. This questionnaire has passed the reliability and validity tests. This questionnaire consists of 11 questions. The questionnaire used in this study is a short version of the TiPS questionnaire, namely TiPS-5, which only consists of 6 questions.

The third questionnaire is *the Medical Outcomes Study Social Support Survey*. The MOS-SSS questionnaire is a questionnaire developed through a 2-year study by the Research and Development (RAND) institution (Sherbourne CD & Stewart AL, 1991). This questionnaire consists of 19 questions divided into several domains. There are 4 domains in this questionnaire, namely social/information support, real support, affectionate support, and positive social interaction. This questionnaire is used to measure the family support provided to patients. The

questionnaire used is a MOS-SSS questionnaire, especially in the domains of emotional support, information support, and instrumental support. The questionnaire used consisted of 12 questions.

The fourth questionnaire is *the Medication Adherence Report Scale*. The MARS Questionnaire is a questionnaire developed by Thompson et al. (2000) as a compliance measurement tool that identifies deficiencies in the DAI (Drug Attitude Inventory). The MARS questionnaire is a combination of various questions from DAI and MAQ, but with greater validity and clinical usefulness. This questionnaire has been established as a standard and is valid to measure the level of patient adherence to medication. The MARS questionnaire consists of 10 questions. The MARS-5 questionnaire used in this study is a short version of the MARS questionnaire. The MARS-5 questionnaire has passed the validity and reliability test conducted by (Stone et al., 2021). The advantage of this questionnaire is that it evaluates thoughts about treatment and habits of following treatment. The determination of respondents is in accordance with the criteria that have been set by the researcher. The research criteria consisted of inclusion criteria and respondent exclusion criteria. After the data was filled in by the respondents, the data was processed using the SPSS version 20 application. Data analysis was conducted to see the frequency distribution of adherence to the ischemia stroke treatment programme and independent variables of length of illness, frequency of taking medication, age, type of childcare, self-esteem, trust in health workers, family support, and income. The multivariate analysis used in this study is a logistic regression analysis. Before a study is conducted, the researcher needs to go through a research ethics test procedure to determine the feasibility of the research to be carried out in order to proceed with the research procedure. This research has received a letter of ethical feasibility from the Health Polytechnic of the Ministry of Health Kupang on Friday, June 16, 2023, with letter number No. LB.02.03/1/0134/2023.

Results and Discussion

Table 1. Length of illness, frequency of taking medication, age, gender, and self-efficacy of ischemia stroke patients for the period of May–June 2023

No	Variable Length of Illness	f	%
1.	Acute	39	61.9
2.	Chronic	24	38.1
	Total	63	100.0
No	Variable frequency of taking medication	f	%
1.	1-2x per day	41	65.1
2.	3-4x/ per day	22	34.9
	Total	63	100.0
No	Age variables	f	%
1.	36-50 years old	24	38.1
2.	51-65 years old	39	61.9
	Total	63	100.0
No	Gender variable	f	%
1.	Law Law	33	47.6
2.	Woman	30	52.4
	Total	63	100.0
No	Self-efficacy variables	f	%
1.	Lack of self-efficacy	14	22.2
2.	High self-efficacy	49	77.8
	Total	63	100.0

Based on Table 1, it shows that the most ischemic stroke patients have experienced acute ischemic stroke in less than 6 months, as many as 39 people (61.9%), and chronic ischemic

stroke in more than 6 months, as many as 24 people (38.1%). The most frequent times for taking medication for ischemic stroke patients were 1-2x/day for 41 people (65.1%) and 3-4x/day for 22 people (34.9%). Based on table 3, the most ischemic stroke patients are between the ages of 51 and 65, with as many as 39 people (61.9%) and as many as 24 people (38.1%) being between the ages of 36 and 50. The gender of the most ischemic stroke patients was male, with as many as 33 people (52.4%) and female, with as many as 30 people (47.6%). The highest self-efficacy of ischemic stroke patients was high self-efficacy in as many as 49 people (77.8%) and low self-efficacy in as many as 14 people (22.2%).

Table 2. Factors affecting ischemia stroke patients' adherence to the treatment Programme

No	Variable	P-value	95% Confidence interval	Odds Ratio
1.	Self-efficacy	0.002	2.378-55.620	22.500
2.	Trust in healthcare workers	0.007	2.692-613.089	40.627
3.	Family support	0.015	1.986-602.243	34.583

Based on the results of the multivariate analysis that has been presented in Table 2, the factors that affect the compliance of outpatients with ischemic stroke at S.K. Lerik Hospital, Kupang City, are as follows: Family support affected patients' adherence to the treatment programme by 34,583 times, with a p-value of $0.000 < 0.05$, meaning that there was a relationship between family support and patients' adherence to the treatment Programme . The greater the family support, the greater the ischemia-stroke patient's compliance with the treatment programme . Trust in health workers affected the compliance of ischemic stroke patients by 40,627 times, with a p-value of $0.000 < 0.05$, which means that there was a relationship between trust in health workers and ischemic stroke patients' compliance with the treatment programme . The greater the patient's confidence in the treatment programme , the higher the level of compliance of ischemic stroke patients with the treatment programme . Self-efficacy affected ischemic stroke patients' adherence to the treatment programme 11500 times, with a p-value of $0.001 < 0.05$, which means that there was a relationship between self-efficacy and ischemic stroke patients' adherence to the treatment programme . The greater the self-efficacy, the greater the level of compliance with the treatment programme .

This study showed that the length of illness did not have a significant effect on patients' compliance with the treatment programme in outpatients with ischemic stroke at S.K. Lerik Hospital, Kupang City. The results of this study are different from the research from (Kim et al., 2020) which shows that patients with comorbidities who have had the disease for a long time have higher adherence to the treatment Programme because patients have gotten used to taking medication continuously.

The difference in the results of the study occurred due to differences in the inclusion criteria used by researchers. This study uses inclusion criteria where existing ischemic stroke patients have a medical diagnosis of ischemic stroke without further complications. Therefore, there are differences in the results of existing research. The self-medication programme can affect patient compliance. A simple treatment programme, such as just once a day and making adjustments to the patient's routine, can improve compliance.

The use of a single medication once a day or a smaller amount of medication is consistently associated with better adherence. Patients with a lower frequency of taking medications, such as 1x a day, had higher levels of adherence compared to patients who had a frequency of 2x a

day, 3x a day, and 4x a day (Coleman et al., 2012).. However, the frequency of taking medication once a day does not guarantee absolute adherence to the treatment programme .

This study showed that the frequency of taking medication did not have a significant relationship with patient adherence to the treatment Programme in outpatients with ischemic stroke at S.K. Lerik Hospital, Kupang City. This is in contrast to the results of research from (Kim et al., 2020) which shows that the frequency of taking medication has a significant effect on patients' compliance with the treatment Programme . The difference in the results of this study is due to differences in demographics and habits in the health facilities where the research is conducted. Research conducted by (Kim et al., 2020) conducted in South Korea, where health facilities package several patients' drugs in different packages according to the prescribed medication time compared to administering the patient's medication individually, as was done at the place where this study was conducted. Packaging of the patient's medication according to the time of taking the medication reduces the level of complexity of the patient's treatment, where the patient must prepare and remember the medication to be taken according to the specified schedule.

This study showed that gender did not show a significant relationship with the level of compliance of ischemic stroke outpatients at S.K. Lerik Hospital, Kupang City. Based on the characteristics of respondents with the most ischemic strokes, patients with male sex. Gender is one of the risk factors that affects the rate of stroke incidence, which cannot be changed. Patients of the male gender are said to have a greater risk of stroke than women. Research (Wardhani & Martini, 2015) showed a weak or less significant relationship between the gender of the respondents and adherence to the post-stroke treatment Programme . Gender shows a less significant relationship because a person's obedience can not only be seen based on gender, but many factors can affect it. Gender is not one of the factors that always affects an individual's compliance because there are some studies that do not have consistent results regarding this gender factor (Rachmania et al., 2020). The gender that is often associated with obedience is the male gender, which has a low level of obedience (Cheiloudaki & Alexopoulos, 2019).. This happens because men as patients tend to rely heavily on women or their wives as caregivers in treatment. Although some studies have shown that males are more likely to disobey the treatment programme , this is not seen in this study because the number of male respondents is greater than that of women.

This study showed that there was no significant relationship between age and ischemic stroke patients' adherence to the treatment programme . This research is in line with research from (Wardhani & Martini, 2015) which shows that there is a weak relationship between age and obedience. Age is one of the risk factors for stroke. As we age, there is a decline in the function of the vascular system, so the older a person is, the higher the chance of having a stroke. After the age of > 55, the likelihood of having a stroke increases by 2 times, according to statistics. Age affects compliance with applying non-pharmacological therapy in the form of physical activity. Age itself is an important factor in determining a person's compliance. For example, early childhood compliance is usually higher than that of adolescents, even though early childhood has limited information. Research from (Cheiloudaki & Alexopoulos, 2019) showed that the age of the patient had no relationship with treatment adherence. Patients at a young age sometimes forget their medication schedule. Although some other studies have shown that patients of older age often forget to take their medications, Age had no significant effect in this study due to the disparity in the number of elderly patients compared to younger patients. This is in line with the theory that age is a risk factor for stroke.

This study shows that self-efficacy has a significant influence on patient compliance with the treatment programme in outpatients with ischemic stroke at S.K. Lerik Hospital, Kupang City. This research is in line with the research (Gangwani et al., 2022), which explains that self-efficacy factors can increase motivation to improve and increase participation in rehabilitation. Self-efficacy and motivation also determine how a patient can cope with various problems and challenges during rehabilitation and treatment Programme s. Self-esteem, or self-efficacy, is a person's ability to perform a specific task or action toward achieving a certain goal (Appalasamy et al., 2019). Self-efficacy requires high self-confidence and self-control, which help in executing the plan as desired. Self-efficacy is an important component in various behavioural models, such as self-efficacy theory, cognitive social theory, and health trust models, and is also related to better post-stroke patient medication adherence. Self-efficacy determines how much time and effort is spent on a challenge. The greater the self-efficacy, the longer the business lasts. Patients with great self-efficacy tend to have the motivation to carry out treatment Programme s more diligently and actively to reduce the physical limitations they experience. Patients with ischemic stroke tend to have limitations in physical movement. High self-efficacy helps patients focus on things that can improve the physical limitations that exist in this case, such as a treatment programme. This study shows that trust in health workers has a significant effect on patient compliance with the treatment programme in outpatients with ischemic stroke at S. K. Lerik Hospital, Kupang City. Trust in health workers as a whole for patients with ischemic stroke at S. K. Lerik Hospital, Kupang City, is relatively high.

The quality of the patient's relationship with medical personnel and family support is an interpersonal factor in treatment adherence. Good and effective communication with medical staff increases patient involvement in the treatment programme . Trust in health workers resulted in increased adherence to treatment Programme s, but this differed according to respondents' income levels (Fan et al., 2022).

Trust in health workers is a situation where patients accept their illness and believe that health workers will provide the best care for their disease (Fan et al., 2022).. This is related to the understanding provided by health workers about the disease and treatment received by a patient.

Patients who do not understand the benefits and goals of the treatment they receive are more likely to experience compliance problems (Wang et al., 2016). Therefore, good and effective communication between health workers and patients is very important. Well-executed communication will reduce the risk of negative trust in health workers and the treatment received and increase medication adherence (Cheiloudaki & Alexopoulos, 2019). Therefore, patients with great trust in health workers are more likely to comply with treatment Programme s. This high trust in health workers makes patients believe that the things suggested and informed by health workers are good and essential to the treatment they are undergoing.

Based on the results of this study, it was found that family support had a significant effect on the compliance of ischemic stroke outpatients with treatment Programme s. Patients with ischemic stroke at S.K. Lerik Hospital, Kupang City, tend to be accompanied by their families when conducting control at the hospital. Ischemia stroke patients of the majority of ages who are quite old are generally accompanied by family, children, and grandchildren. Male patients tend to be accompanied by wives, children, and sometimes grandchildren. Female patients tend to be accompanied by a husband or child.

The role of the family is also very important in the treatment and recovery process of stroke patients. Family caregivers who care for patients with post-stroke disabilities will assist patients in taking medication to prevent recurrence. The support provided by the family can be

instrumental, emotional, or informational (Helitty, 2023). The family provides facilities and infrastructure as well as costs for treatment, and treatment is one type of institutional support that can be provided by the family. Emotional support can be in the form of attention, motivation, affection, and not letting the patient feel lonely and depressed. Informational support from the family can be in the form of answers to questions they have about their illness, the time to take medication, and so on. The family, as the closest caregiver owned by the patient, plays a very vital role in the stroke patient's compliance with the ongoing treatment programme and the recurrence of the stroke.

This research is in line with research by (Wardhani & Martini, 2015) which shows that good family support increases stroke patients' compliance when undergoing rehabilitation, medication, control, or therapy. Research shows that family support, social support, and assistance from the family can improve adherence to treatment for stroke patients. The greater the social support received by the patient, the higher the patient's compliance rate (Ika Nur Rohmah & Maharani Fadjri, 2023).

This research is not in line with the research (Kim et al., 2020), which states that social and family support and depression have no significant effect on optimal adherence. This difference may be due to the fact that as many as 83% of the study respondents lived with family but had mild symptoms and could take medication independently. Research from (Wang et al., 2016) It shows that there may not be a direct relationship between medication adherence and family support. Some of the factors that may cause such indirect relationships are the quality of family or social relationships, patient illnesses such as depression, and the number of friends and family who are able to provide help. These factors do not predict compliance, but the quality of interpersonal relationships makes a difference in treatment adherence.

Family support is needed to help patients carry out daily activities and carry out treatment procedures, but the quality of family support and intrapersonal family relationships determine treatment adherence. This study shows that income does not have a significant influence on patient compliance with the treatment Programme me in outpatients with ischemic stroke at S.K. Lerik Hospital, Kupang City. This research is not in line with the research (Ika Nur Rohmah & Maharani Fadjri, 2023) that shows that patients with low incomes who do not meet their daily needs tend to have lower levels of medication adherence. On the other hand, patients with high incomes tend to have higher levels of compliance. The difference between the results of this study is due to the large gap between the incomes in the results of this study. The gap between existing earnings may result in bias and degrade the accuracy of existing research results. Patients with low incomes are more likely not to have their disease checked due to financial problems. The cost of treatment and medication for ischemic stroke patients is quite large, making patients tend to save on existing drugs and not take drugs when they feel they are unnecessary. Patients' adherence to treatment Programme mes is greatly influenced by income or economic factors. Based on research from (Shani et al., 2021), respondents with lower incomes had lower levels of adherence to treatment Programme s. This is due to the high cost of the prescribed drugs. The compliance of patients with low-income levels is also greatly influenced by the low literacy provided by health workers.

Conclusion

This high trust in health workers makes patients believe that the things suggested and informed by health workers are good and essential things in the treatment they are undergoing.

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