**Review**

# Risk Factors Of Stroke: Literature Review

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## ABSTRACT

***Background:*** *Stroke is the most common cause of disease in the world and is the highest cause of death in Indonesia, so prevention is very important to minimise the incidence of stroke. The most appropriate effort to prevent stroke is to control stroke risk factors. The purpose of the literature review is to analyse the risk factors associated with stroke events in patients.*
***Methods:*** *The method used is a literature review using a journal database from Pubmed, Science Direct, and Google Scholar. In the 2019-2023 range, with the keywords "stroke, factors causing stroke", and stroke, 220 articles were obtained*
***Results:*** *Search for articles according to the criteria and obtain ten articles that are ready to be reviewed. These articles explain the risk factors for stroke. It is hoped that stroke patients will try to control stroke risk factors*
***Conclusion:*** *This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle*

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## Introduction

Stroke is the third leading cause of death in the world after cancer and heart disease and the leading cause of disability. Stroke can affect anyone, both young and old, male or female. All groups, both low and high socioeconomic groups and rural and urban communities suffer strokes (Dhamoon et al., 2021; Jeong et al., 2020; Tang et al., 2019). According to WHO (World Health Organization), 1 in 4 people are estimated to experience a stroke in their lifetime. Every year, as many as 15 million people in the world suffer a stroke, around 5 million people experience permanent paralysis. The number of stroke cases in Southeast Asia is 4.4 million.

Indonesia ranks first in stroke sufferers in Asia. This causes the problem of stroke to become increasingly important and urgent. (Riskesdas, 2018) data shows that the highest stroke incidence rate in Indonesia is in East Kalimantan Province (14.7%), while the lowest cases are in Papua Province (4.1%). The incidence of stroke increases with increasing age, where the age group 75 years and over has the highest cases (50.2%) and the lowest is 15-24 years old (0.6%). The prevalence of stroke between men and women is almost the same, namely 11% and 10.95%.

In 2013-2018, the prevalence of stroke in West Nusa Tenggara province increased by 4.5% to 8%. Based on data from the Praya City Health Office, there were 118 cases. Based on Praya Hospital Medical Records data in 2019, there were 209 stroke cases, and 22 people died (13.87%). In 2020, there were 221 stroke cases, and 53 people died (23.98%). In 2021, stroke cases increased significantly compared to the previous two years, namely 318 people, of which 168 were men (52.84%) and 150 women (47.16%), while 81 people died (26.79%).

Risk factors for stroke consist of factors that cannot be modified and can be modified. Risk factors that cannot be modified include age, race, gender and genetics, while risk factors that can be modified include hypertension, diabetes mellitus, atrial fibrillation, smoking and alcohol addiction. Hypertension is the main factor that causes stroke in around 95% of cases. Unhealthy lifestyle habits such as consuming fast food, preservatives, high salt, high sugar, lack of physical activity, fatigue, work stress and smoking also increase the risk of stroke (Chishi et al., 2023; Sykora et al., 2022; Zhao et al., 2019). Low knowledge regarding risk factors for stroke, both in terms of recognising stroke symptoms, stroke services that are not yet optimal, and low levels of individual compliance or compliance with stroke therapy programs to prevent recurrent strokes, is a weak point in stroke management in the world.

Based on data from Basic Health Research (Riskesdas, 2018) compared with Riskesdas 2013, it was found that there was a change in trend; there was a significant increase in patients with people suffering from stroke in old and productive age. Epidemiologists predict that currently and in the future, around 12 million people in Indonesia aged over 35 years will have the potential to experience a stroke. Therefore, comprehensive efforts to control stroke risk factors are urgent in the health sector so that individuals in old age and productive age can avoid stroke attacks (Grimaud et al., 2019; Héja et al., 2021; Kono et al., 2020; Wilbers et al., 2020)

## Methods

This method uses the method of *literature review*. Article searches were carried out in September 2023 using journal databases from Science Direct, Pubmed, and Google Scholar. Journal article searches were carried out systematically from the last four years, namely 2019-2023, with the search keywords "Stroke" and Risk Factors for Stroke. For relevant searches. The research will filter the articles as a whole from the selected references without the exception of the title and abstract so that more and more relevant articles are obtained.

Inclusion criteria on *systematic review* These are 1) Respondents are stroke patients, 2) the intervention focuses on risk factors for stroke, and 3) Article selection is not limited to methodology, population and results. Meanwhile, the exclusion criteria *systematic review* These are 1) research that is not related to risk factors for stroke, 2) research that is not conducted on stroke patients, 3) research that is not published such as final scientific papers (thesis, theses and dissertations), abstracts, conferences and case reports.

Articles that have been obtained from the database will be assessed using the PICO method in accordance with the inclusion and exclusion criteria, which contain 1) the title of the article, 2) the author and year of publication of the article, 3) the research methodology (population, sample, intervention and analysis). Research result.

## Results

Searches for international research articles were obtained from Science Direct, Google Scholar and PubMed. From the search results, further identification according to the inclusion and exclusion criteria resulted in 10 articles being obtained.

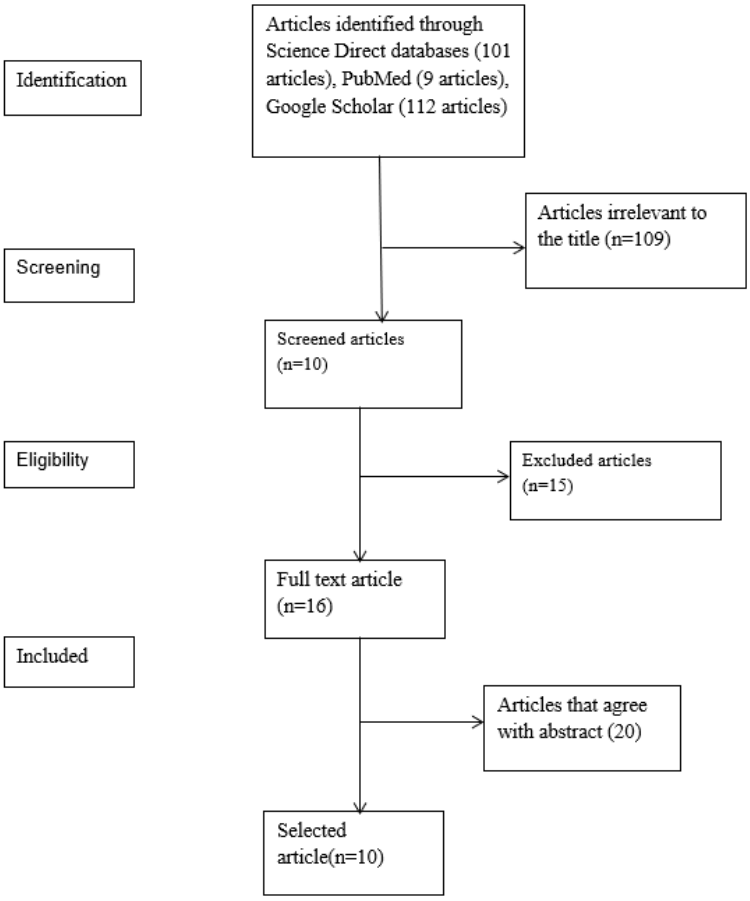


Figure 1. Literature Search Flow Diagram

Table 1. Data Distraction Method

| No | Title, author, and year of publication | Research Methodology | Research result |
|---|---|---|---|
| 1 | Analysis of associated risk factors with the incidence of stroke: A Literature Review (NURHAYATI, 2021) | Design: descriptive non-experimental correlation, namely cross-sectional correlation method<br>Subjects: 40 patients<br>Variable: analysis of risk factors for stroke<br>Instrument: Article search via Science Direct and Google Scholar | From the results of this research that was reviewed, it was obtained<br>shows that the therapy given is a risk factor for stroke in stroke patients |
| 2 | Risk factors that influence stroke incidence (Utama & Nainggolan, 2022) | Design: Systematic literature review<br>Subject: 10 articles<br>Variable: risk factors that influence the incidence of stroke.<br>Instrument: article search via Google Scholar, PubMed. | Of the ten articles that have been reviewed, the risk factors for stroke have increased, namely gender, genetics, age and lifestyle. |
| 3 | Analysis of risk factors for stroke (Kencana et al., 2022) | Design: case-control<br>Subjects: The case group is stroke patients repeated for a total of 66 participants, the two control groups were examined for gender and history variables hypertension, DM, Dyslipidemias. | From the research results shows that (p<0.05 OR=2.941) |
| 4 | Analysis of risk factors for stroke in stroke patients (Manurung & Diani, 2015) | Design: observational Analytical with a case-control approach.<br>Subjects: 84 patients (42 people for the case group and 42 people for control group)<br>Variable: analysis of risk factors for stroke.<br>Instrument: cleaner | The research results showed that based on statistical tests, the risk that could not be modified was obtained by historical factors, family illness with a p-value of 0,016; risk factors that can be modified are total cholesterol p-value of 0,000, hypertension with a p-value of *0,001,* LDL with *p value 0,002.* |
| 5 | Risk factors for stroke (Lilipory et al., 2019) | Design: case-control using a retrospective approach.<br>Subjects: 64 people with a | The results of this study are a risk factor for stroke, namely hypertension (p= 0.00 OR=8.52; |

| No | Title, author, and year of publication | Research Methodology | Research result |
|---|---|---|---|
| | | ratio of 1:1 (32 cases and 32 controls | 95%. CI physic p=1.00, OR=0.80; 95% CI 0.21-2.95) |
| 6 | Factor analysis the occurrence of stroke and types of stroke | Design: retrospective<br>Subject: 200 respondents<br>Variable: analysis of risk factors for stroke | Results of this research showed that some respondents experienced ischemic stroke. |
| 7 | Risk factors for stroke | Design: observational analytical.<br>Subjects: 47 respondents with a purposive sampling technique.<br>Variable: risk factor the occurrence of a stroke<br>Instrument: questionnaire with Spearman rank data analysis. | Results of this research indicates hypertension is associated with the risk of stroke (p=0.05 OR= 7.200), smoking is associated with the risk of stroke (p= 0.04; 0R=8.144), obesity (p=0.000; OR=16.0000) hypertension and obesity are the most dominant factors. |
| 8 | Analysis of stroke risk factors (Anissa et al., 2020) | Design: Analytical observational with case-control<br>Variable: analysis of risk factors for stroke.<br>Subjects: 88 respondents with 44 cases and 44 controls. | Results of this research show that a history of hypertension and age are still risk factors for stroke |
| 9 | Risk factors for ischemic stroke and haemorrhage (Othadinar et al., 2019) | Design: descriptive<br>Variable: Risk factor incidence of ischemic and hemorrhagic stroke<br>Subjects: All ischemic and hemorrhagic stroke patients who stayed at the National Brain Center Hospital in 2018 2016-2017 | The articles reviewed show that the factors are age, history of illness, hypertension, DM, and lifestyle, which influence the risk factors for stroke. |
| 10 | Risk factors for stroke in hypertensive patients (Dedi et al., 2023) | Design: observational with a population case approach from stroke research suffering as many as 150.<br>Subjects: Researchers took a sample of 20%. | The research results showed that the respondents were healthy by 13(43%) and respondents who did not as many as 17 (56%) |

## Discussion

The research results of the ten journals reviewed proved that the risk factors for stroke were increasing due to a history of hypertension, DM, high cholesterol, age, gender and lifestyle. Stroke is the most common cause of death in the world after heart disease and the main cause of disability (Akhtar et al., 2022; Sutherly et al., 2021; Tong et al., 2022). Modern lifestyles have changed human attitudes and behaviour, including eating patterns, smoking, alcohol consumption and unhealthy lifestyles, so that people suffering from degenerative diseases (diseases caused by the function of body organs) are increasing and threatening lives. Some degenerative diseases that often occur in society are coronary heart disease, hypertension, DM, stroke and cancer.

## Conclusion

This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle.

## Authors Contributions

The author carries out tasks from data collection, data analysis, and discussions to making manuscripts.

## Conflicts of Interest

There is no conflict of interest.

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