

## Management of Fatigue in Post-Stroke Patients

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### Abstract:

Post-stroke patients often have sequelae that are difficult to avoid. One of the impacts that can occur after a stroke is the onset of cognitive impairment, physical disability, and even death due to the extent of brain damage that occurs. Another impact of stroke is Fatigue Post Stroke (FPS), where most stroke patients experience fatigue, and this condition can persist even though other symptoms caused by stroke have improved. This literature review aims to determine the appropriate management of fatigue after a stroke. The method in this study is a literature review by collecting published literature from databases such as ResearchGate, Google Scholar, and PLOS using Boolean stroke management and post-stroke fatigue. The literature search focused on articles related to fatigue in stroke patients. Both used RCT (Randomized Control Trial) design, Quasi Experiment, Qualitative study, and Survey study from the year (2015-2022). Based on the results of data extraction from the author, two themes can be taken by the author, post-stroke patients who experience fatigue and fatigue management in stroke. The update in this literature review is the manifestation of fatigue conditions that, on average, will be experienced by stroke patients. If not handled properly, it will have a worse impact physically and psychologically, which can certainly interfere with the recovery process. So, it is necessary to appropriately manage both physical exercise and psychological interventions following the fatigue conditions of post-stroke patients. We recommend that in health services, nurses pay more attention to patient responses related to fatigue to provide appropriate nursing interventions and increase patients' desire to undergo rehabilitation.

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## INTRODUCTION

Stroke is currently the second leading cause of death after Ischemic Heart Disease, with patients over 60 years (WHO, 2017). After a stroke, patients often have sequelae that are difficult to avoid; one of the impacts that can occur after a stroke is the onset of cognitive impairment, physical disability, and even death due to the extent of brain damage that occurs (Kjeverud et al., 2020). Another impact of stroke is Fatigue Post Stroke (FPS), where most stroke patients experience fatigue, and this condition can persist even though other symptoms caused by stroke have improved. So that Fatigue itself can be described as a state of fatigue that is not related to previous activity levels, and this post-stroke fatigue usually cannot be corrected only by rest; there is a chronic and subjective feeling of lack of body energy felt by stroke patients. Fatigue problems often occur in post-stroke patients, both first and recurrent attacks, so this needs special attention to not interfere with the rehabilitation process in the post-recovery (Kjeverud et al., 2020).

Fatigue is severe physical and mental exhaustion associated with illness. Fatigue can last up to 5 years after treatment. Fatigue interferes with work, social relationships, mood, and daily life and can affect a patient's quality of life (Fibriansari et al., 2023). Fatigue affects the quality of sleep and the patient's physical and mental health (Kurniyawan et al., 2023). Fatigue can affect the adequacy and quality of a person's sleep, characterized by eye strain and drowsiness, making it possible to sleep during activities (Pratiwi et al., 2022).

The prevalence of FPS is, on average, 25% - 85% of stroke patients (Cumming et al., 2016). Fatigue can occur in less than three months, often called acute fatigue, but can also appear to fatigue more than three months after the attack or chronic fatigue (Aali et al., 2020). In Indonesia itself, it is also reported that around 81.2% of patients experience fatigue after a stroke attack (Diviyasita et al., 2022). Fatigue can be considered one of the symptoms caused by patients experiencing post-stroke depression. Still, the fact is that even without experiencing depression, stroke patients are reported to often experience fatigue. And to prove this truth, a more specific "Post Stroke Fatigue" (PSF) examination is needed (Ponchel et al., 2015).

The impact of prolonged fatigue can affect physical or psychological problems, from the physical decline in Activity Daily Living (ADL) and decreased sexual activity to a periodic decrease in quality of life; another psychological impact that is no less important to be given attention is prolonged stress to cause depression (Puspita & Kariasa, 2020). Based on this, it is important to identify the proper management of fatigue in post-stroke patients, considering that fatigue during a stroke is not just about ordinary fatigue but a decrease in physical and psychological aspects that cannot be overcome by resting. Because if this is continuously left unchecked, it will certainly worsen the condition of people with stroke, decreasing the quality of life of stroke patients themselves and affecting the financial or psychological conditions of the patient's family who care for them. In order to fulfill the need for care, this study aims to determine the appropriate management of fatigue after a stroke.

## METHOD

The method in this research is a literature review by collecting published literature from databases such as ResearchGate, Google Scholar, and PLOS. By using the Boolean stroke management and post-stroke fatigue from 2015-2022.

The literature search focused on articles related to fatigue and fatigue management of stroke patients. Both use RCT (Randomized Control Trial), Quasi Experiment, Qualitative study, and Survey study designs; The inclusion criteria in this study were all studies related to fatigue in post-stroke patients who had received treatment to overcome fatigue. The exclusion criteria are articles that do not focus on the fatigue of stroke patients and are only available in abstract form. The following is the flow of the literature search process from the three databases.

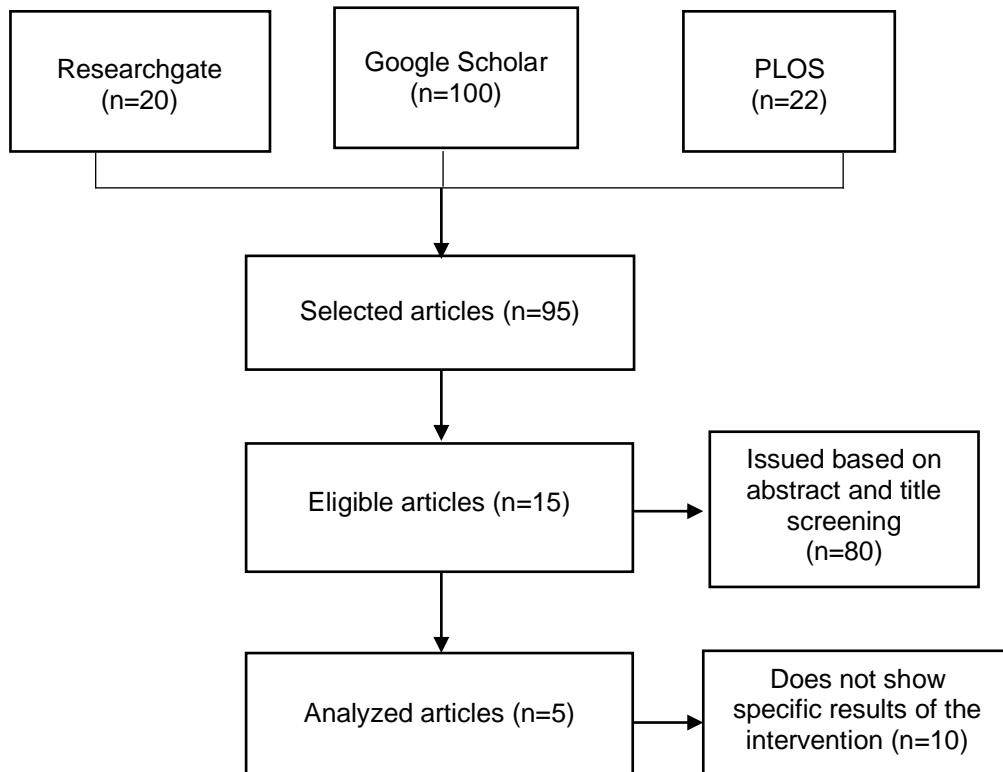


Figure 1. Literature Search Process from Three Databases

**RESULT**

The results of the literature search obtained 20 articles from the Researchgate database, 100 articles from the Google Scholar database, and 22 articles from PLOS that match the keywords. These articles were then filtered according to the availability of full text, the similarity of titles, and years of publication (2015-2022) obtained 95 articles. Based on these 95 articles, 15 articles were obtained after screening the titles and abstracts. The results showed that 10 articles could be analyzed.

Table 1. Results of the Selected Literature

No	Citation	Title	Destination	Sample Characteristics	Research Methodology	Results
1	(Choi-Kwon et al., 2015)	Nursing interventions for poststroke fatigue	Provide an overview related to FSP regarding factors that cause fatigue, treatment interventions, and appropriate nursing implications.	Post-stroke patients who do not have other disease complications. Post-stroke patients who experience fatigue for more than two weeks.	Qualitative study	Oral and parenteral therapy and regular physical exercise can reduce ADL limitations and improve conditions due to fatigue.

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No	Citation	Title	Destination	Sample Characteristics	Research Methodology	Results
2	(Wu et al., 2017)	Development of a psychological intervention for fatigue after stroke	Knowing the effect of providing psychological intervention in overcoming fatigue in stroke patients.	Participants are those who have suffered a stroke. Suffered a stroke for at least 3 months since onset. Have points on the Mini-Mental State Examination (K-MMSE) of more than 21. Mild to moderate motor impairment.	Quasi Experiment	Providing psychological interventions with psycho-education can reduce fatigue levels through improved physical and social activities
3	(Thomas, 2020)	Understanding Post-Stroke Fatigue	Knowing the proper management of fatigue in post-stroke patients	Post-stroke patients Stroke patients who follow therapy in overcoming fatigue	Survey study	Post-stroke fatigue cannot be resolved by rest alone but needs to be treated with appropriate interventions for each individual both physically and psychologically, such as physical exercise.
4	(Mead et al., 2022)	Post-stroke intervention trial in fatigue (POSITIF): A randomized multicentre feasibility trial	Testing the feasibility of a telephone-delivered, educative intervention for post-stroke fatigue	Post-stroke patients experienced fatigue from three months to two years.	Randomized controlled parallel-group trial.	Fatigue in stroke is described by mood, anxiety, social participation, and quality of life, so it needs appropriate treatment related to the most prominent responses such as physical rehabilitation.
5	(Ghaffari et al., 2022)	The Effects of Vestibular Rehabilitation on Poststroke Fatigue: A Randomized Controlled Trial Study	Knowing the effect of vestibular rehabilitation on BADL (Basic Activities of Daily Living), on the fatigue level of post-stroke patients	A stroke patient with hemiplegia Stroke patients can still perform minimal ambulation independently.	Quasi Experiment	Vestibular rehabilitation can help improve fatigue levels as well as depressive symptoms following a stroke.

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No	Citation	Title	Destination	Sample Characteristics	Research Methodology	Results
6	Maurizio, Paciaroni and Monica Acciarresi, 2019	Buyang Huanwu Tang (Boyang Hwano Tang) for the treatment of post-stroke fatigue	Evaluate the efficacy and safety of BHT as a treatment for post-stroke fatigue (PSF)	Eight databases	Systematic review of randomized controlled trials	The conclusion of our systematic review will provide evidence to judge whether BHT is an effective intervention for patients with PSF.
7	Zhang et al., 2020	Related risk factors associated with post-stroke fatigue: a systematic review and meta-analysis	Identify the risk factors contributing to PSF, especially clinical and social risk factors, which may help to prevent PSF	14 databases	systematic review and meta-analysis	This meta-analysis shows that chronic PSF appears to be largely attributable to patients with multiple comorbidities. It is necessary to strengthen the treatment for stroke-related complications and improve stroke patient care, which could help to reduce the incidence of PSF.
8	Nguyen et al., 2019	Cognitive behavioural therapy for post-stroke fatigue and sleep disturbance: a pilot randomised controlled trial with blind assessment	To evaluate the effectiveness of individual cognitive behavioural therapy (CBT) for post-stroke fatigue and sleep disturbance compared to treatment as usual (TAU)	15 participants	parallel two-group pilot randomised controlled trial	CBT is a promising treatment for improving post-stroke fatigue, sleep quality and depression
9	Visser et l., 2019	Modafinil treatment modulates functional connectivity in stroke survivors with severe fatigue	To analyze modafinil treatment induces significant changes in rsfc in post-stroke fatigue	twenty-eight participants	double-blind, randomized crossover trial	modafinil treatment induces significant changes in rsFC in post-stroke fatigue
10	Aali et al., 2020	Post-stroke fatigue: a scoping review	To identify and summarise the most recent research on PSF, in order to update the evidence base.	30 studies	a scoping review	none of the recent studies are robust enough to change current clinical practice.

## DISCUSSION

Based on the results of data extraction from the author, two themes can be taken by the author, post-stroke patients who experience fatigue and fatigue management in stroke. The update in this literature review is the manifestation of fatigue conditions which are part of the impact of a stroke attack. If not handled properly, it will lead to more severe impacts that interfere with recovery. According to the five articles reviewed, it is important to carry out fatigue management to improve physical and psychological conditions when undergoing the post-stroke rehabilitation process.

### Post-stroke patients who experience fatigue

Post-stroke patients who experience fatigue are often associated with their emotional condition from the psychological aspect, which will certainly contribute to their physical ability when carrying out daily activities. This reflects that fatigue is very relevant to the decline in the motoric ability to carry out daily activities. In addition, several studies have also shown that women tend to experience fatigue faster than men (Noor, 2018). Where motor function in women also greatly affects the onset of fatigue in post-stroke patients. This is because neurological disorders that occur in the form of impaired motor function certainly lead to a decrease in physical activity. This inactive physical condition causes a decrease in physical fitness, and it is confirmed that 60% of post-stroke patients experience fatigue (Pramana et al., 2022). In addition, fatigue is one of the assessments of the quality of life. The fatigue indicator is also one of the important items in the recovery process of post-stroke patients. Patients whose fatigue conditions are not improved tend to have a low desire to participate in undergoing the stages of the rehabilitation process, which will certainly affect the decrease in the quality of life of post-stroke patients (Dewi et al., 2020). In this case, of course, fatigue must get the right treatment, considering that fatigue in stroke patients is related to physical fatigue and emotional fatigue in undergoing the rehabilitation process or activities in everyday life.

### Management of fatigue in stroke

Fatigue management can be given according to the dominant complaints felt in stroke patients. Some fatigue interventions that can be given include psychological interventions by improving the mood and behavior of the patient and other therapies can also be given, such as vestibular rehabilitation related to symptoms of depression due to prolonged fatigue or the use of traditional medicines and herbs (Puspita & Kariasa, 2020; Ghaffari et al., 2022). Fatigue in stroke patients is also often associated with the treatment process for chronic diseases, which lasts a long time and requires a long period to improve the condition. Long-term treatment also always adds to the psychological impact, such as excessive anxiety due to uncertain conditions during the treatment process. The mechanism of fatigue in chronic conditions, including stroke, can be associated with treatment regimens that cause fatigue and repetition of therapy that requires a long time; efforts to overcome fatigue or fatigue, especially in stroke patients, can be done with energy conservation, namely minimizing activities that require large amounts of energy. This management is also one of the complementary therapies to stimulate the central nervous system to increase endorphin secretion. If endorphins increase, there will be vasodilation of blood vessels and reduced oxygen demand which impacts reducing afterload and peripheral resistance. In the end, it will improve circulation and perfusion to the tissues so that fatigue can be overcome (Nugraha, 2018). This proves that fatigue treatment needs to be given to improve conditions,

considering that fatigue that occurs in stroke patients is not only from physical complaints but also psychological aspects that need to be treated accordingly.

### CONCLUSION

Based on the literature review conducted by the author, the condition of fatigue in stroke patients is a post-attack impact that is difficult to avoid. An increase in the degree of fatigue can also directly affect the poor quality of life because it affects physical or psychological aspects. So, it is necessary to treat it as early as possible to reduce the adverse effects caused by fatigue.

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### CONFLICT OF INTEREST

In writing this article, the author team has no conflict of interest with anyone or anything else, and STIKES Wira Medika Bali funded the entire process.

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