International Journal of Research and Review
Vol. 10; Issue: 12; December 2023
Website: www.ijrrjournal.com
Research Paper *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

The Relationship between Walking Ability and Fall Risk in Poststroke Patients

Jerry Maratis[1], Duta Liana[2], Erlina Puspitaloka Mahadewi[3], Kesit Ivanali[4], Trisia Lusiana Amir [5], Martin Saputra[6]

[1,4,5]Department of Physiotherapy, [2]Department of Health Science, [3]Department of Economic and Business, [6]Department of Computer Science;
Esa Unggul University, Jakarta, Indonesia.

Corresponding Author: Jerry Maratis (jerry.maratis@esaunggul.ac.id)

DOI: https://doi.org/10.52403/ijrr.20231215

ABSTRACT

Objective: To determine the relationship between walking ability and the fall risk in after stroke patients. Method: This research was descriptive quantitative with observational research type. The total sample of 35 people after stroke was obtained using a purposive sampling technique. Measurement of walking ability using the Dynamic Gait Index (DGI) showed a mean ± SD value of walking ability of 16.74 ± 5.20 and measurement of fall risk using the Timed Up and Go Test (TUGT) showed a mean ± SD value of 17.871 ± 6.55. Results: The Pearson Product Moment correlation test obtained a value of p = 0.001with a value of r = - 0.984 which shows a negative correlation between the two variables, which means that when the level of walking ability increases, the fall risk tends to decrease. Conversely, when the level of walking ability decreases, the risk of falling tends to increase. Conclusion: There was a relationship between the ability to walk and the fall risk in after stroke patients.

Keywords: Post-stroke patients, walking ability, fall risk, Dynamic Gait Index (DGI), Timed Up and Go Test (TUGT).

INTRODUCTION

Developments in the current era of globalization and the COVID-19 pandemic and it is still not over causing significant changes in various fields such as education, economy, socio-culture followed by advances in technology and science in the discovery of a COVID-19 vaccine. Advances in science and technology bring both positive and negative impacts towards everyday human life. The positive impact felt is making various activities easier and faster to do, while the negative impact is that people become less sensitive to the environment around and lazy to do physical activity.

The lifestyle of dependence on technology and information is felt by all walks of life. Various conveniences gained from progress It causes humans to consciously or unconsciously undergo changes on his lifestyle behavior that tends to be monotonous or limited and followed with fast-paced dietary changes to save time. Human The more consumptive in meeting their needs, and the less activity movement, diet and nutritional intake and energy from food consumed can affect the occurrence of weight gain

The rapid development of technology at this time has an impact on changes in human life patterns as they are now. Everything and His needs can be met easily and quickly. This is what makes People today lack physical activity. Lack of activity Physical and movement disorders are caused by several diseases that become Causes of the high incidence of non-communicable diseases that occur in Indonesia one of them is stroke.

The impact of this stroke limits the activity of carrying out daily activities or daily living activities (ADL). Such as movement and function disorders, namely The patient has difficulty moving limbs, especially functional activity hands and feet as to do dress, drink, eat, write, grabbing, grasping, walking as there is a change in motor control. Result Riskesdas 2018 shows the prevalence of non-communicable diseases experiencing increase when compared to Riskesdas 2013, including cancer, stroke, chronic kidney disease, diabetes mellitus, and hypertension. Explained Head of Agency Health Research and Development, the prevalence of stroke rose from 7 percent to 10.9 percent (1)

LITERATURE REVIEW

In stroke disorders there are impaired function and movement, limbs The hands and feet function so important in carrying out daily activities in improving functional motion (2). Such as the functions of walking, eating, and drinking, can not be performed effectively, impaired movement of the upper and lower extremities can limit everyday functional movements, even to perform movements Simple movements, such as eating and drinking, so they will decrease immune system and decreased nutritional status due to swallowing disorders and frequent choked. This occurs due to damage in the brain and decreased brain function in the Poststroke people, causing tend to be unproductive and become a burden health financing (3).

In this case the researcher is interested in researching and knowing the "Relationship ability to walk with the risk of falling people post-stroke". This study It is expected to add references for the health sector, especially physiotherapy and the community so that it can be a form of prevention to prevent the risk of falling Early. Based on the above background, then the problem will be outlined in The study was: Is there a relationship between the ability to walk and the risk of falling Post-stroke people?

MATERIALS & METHODS

This research was a descriptive analytical study conducted using a cross-sectional approach to examine the relationship between walking ability and the fall risk. This research was conducted in June – September 2022 at Sasana Stroke Service. The population in this study is all post-stroke people at the Sasana Stroke Service and the samples that will be used in this research are some post-stroke people taken using simple random sampling. The sample consists of an accessible portion of the population that can be used as research subjects through sampling, while sampling is the process of selecting a portion of the population that can represent the existing population. The sampling method is purposive sampling, where the samples taken will be representative if they comply with the predetermined sampling criteria. According to Nursalam (2013), the sample size is determined using the formula:

n = 15% x N, n = 0,15 x 200, n = 30 samples. The number of samples used in this research was 30 samples plus 15%, so 30 + 4.5 = 34.5. Rounded up to 35 samples of stroke patients who met the inclusion and exclusion criteria.

a) Inclusion Criteria

1) Ischemic and hemorrhagic stroke patients who are willing to be samples research and follow the research stages.
2) Male and female stroke patients aged 40-60 years.
3) Patients who are able to walk independently.
4) Stroke patients who have and do not have a history of falls
5) Sign the informed consent.

b) Exclusion Criteria

1) Stroke patients with other neurological disorders (such as Parkinson's)
2) Stroke patients with joint disorders before the stroke (eg: osteoarthritis, gouty arthritis)
3) Stroke patients who have a history of serious diseases such as heart disease.

c) Abortion Criteria

Discontinuation criteria are criteria where a sample can be considered invalid continued research because of the following criteria:

1) Not able to perform any movement of the test or measurement.
2) Declare that you have withdrawn from the research for any reason.

STATISTICAL ANALYSIS

The analytical method used in this research is statistical analysis, then the SPSS Version 20 system is used to process the data. In analyzing the data obtained, the researcher used several statistical tests, namely the Shapiro Wilk normality test, which resulted in a concentration of p >0.05, so the data was normally distributed, so the hypothesis test used was a parametric test because the data was normally distributed. Then the hypothesis test used the Pearson correlation test.

RESULT

Table 1 Research sample categories

Category	Total	Precentage
Age	**N**	**%**
40-49 Years	14	40%
50-59 Years	15	42,86%
60-69 Years	6	17,14%
Gender	**N**	**%**
Man	20	57,14%
Women	15	42,86%
Stroke Classification	**N**	**%**
Ischemic	31	91%
Hemorrhage	4	9%

Table 1 explains the sample categories in this study, namely the distribution of samples based on age, showing that of the 35 research samples, it was found that the highest percentage was 42.86% with an age range of 50-59 years (15 samples), 15 samples were male with a percentage of 57, 14%. This shows that in this study more samples were male with the highest percentage, it was found that the highest percentage of 91% for ischemic the stroke classification.

Table 2 Variable measurement results

Variabel	Mean	SD
Walking ability	16.74	5.20
Fall risk	17.871	6.55

Measurement of walking ability can be seen from the data in table 2 used the dynamic gait index (DGI) to measure the walking ability of the post stroke patients which shows the mean value and standard deviation (SD) of 16.74 ± 5.20. The measurement of fall risk used the timed up and go test (TUGT) measuring instrument which showed a mean and standard deviation (SD) of 17.871 ± 6.55, which means that the fall risk experienced by the post stroke patients at the Sasana Husada Physiotherapy Clinic is a relatively low level of fall risk.

Table 3 Results of the Shapiro-Wilk normality test

No	Variabel	p-value	Keterangan
1	Walking ability (DGI)	0,094	Normal
2	Fall risk (TUGT)	0,106	Normal

After the normality test was carried out using the Shapiro-Wilk test in table 3, the data processing results were obtained from the independent variables, namely walking ability with a value of p = 0.094, which means p >0.05, it can be said that the data is normally distributed. Whereas for the dependent variable, namely the fall risk, the value of p = 0.106 was obtained, which means p >0.05, it can be said that the data is also normally distributed. From the results obtained in the normality test, it can be concluded that the hypothesis test in this study is a parametric test using the Pearson product moment correlation test.

Table 4 Pearson product moment correlation test results

		Fall risk
Walking ability	r	-0.984
	p	0.001
	N	35

Based on table 4 above, it can be seen that based on the Pearson product moment correlation test results, the value of p = 0.001 is obtained, where p <α value (0.05) indicates H0 is rejected and H1 is accepted. So it can be concluded that there was a relationship between walking ability and the fall risk in the post stroke patients at Sasana Husada Physiotherapy Clinic. And the value of r = -0.984 which showed a negative correlation between walking ability and the fall risk in the post stroke patients at Sasana Husada Physiotherapy Clinic. The conclusion was that the value of the correlation coefficient (r) showed a negative correlation between the two variables which means that when the level of walking ability increases, the fall risk tends to decrease. Conversely, when the level of walking ability decreases, the fall risk tends to increase. Then H1 is accepted, that is, there was a relationship between walking ability and the fall risk in the post stroke patients at Sasana Husada Physiotherapy Clinic.

DISCUSSION

The sample characteristics obtained in this study were gender, age, stroke classification, type of hemiparesis, and walking ability. The gender of the research sample was more male than female with a difference of 5 people (14.29%). The majority of stroke patient samples had an age range of 50-99 years with a total of 15 samples (42.86%), while the least age group was 60-69 years with 6 (17.14%) hemiparetic stroke patients. Classification of stroke with the ischemic type dominating with 31 samples (88.57%) and the hemorrhagic type with 4 people (11.43%).

Based on the results of research that has been conducted, it shows that the number of male samples is higher than female, with a difference of 14.29%. So, it can be concluded that the number of male stroke patients is greater than female, especially at the Sasana Husada Physiotherapy Clinic. Gender differences as a risk factor for stroke can be caused by male habits in general, such as smoking, which can trigger stroke (4).

This is in accordance with a study conducted (5) which shows that physical activity can produce less severe strokes. Pre-stroke physical activity was associated with less severe stroke with an explanatory value of 6.8%.

CONCLUSION

Based on the research results and statistical analysis, it can be concluded that there was a relationship between walking ability and the fall risk in the post stroke patients at Sasana Husada Physiotherapy Clinic. The higher the level of walking ability carried out, the lower the fall risk that occurs in the post stroke patients.

Declaration by Authors

Ethical Approval: Approved.

Acknowledgement: The researcher realizes that without the help and support of various parties, this research would not have been able to run well. In this case the researcher has received a lot of moral and material assistance and guidance. So the researchers would like to thank all the staff of the Faculty of Physiotherapy and research and community service institute, University of Esa Unggul, who have facilitated at the Faculty of Physiotherapy, University of Esa Unggul and for giving permission regarding this research activity.

The researchers also thanked all the staff of the Sasana Husada Physiotherapy Clinic who had assisted in the process of collecting research data and providing facilities and infrastructure during the research. As well as the post stroke patients at Sasana Husada Physiotherapy Clinic who have agreed to be respondents in the research. Do not forget to thank the Indonesian Physiotherapy Association for hosting researchers in the Indonesian Physiotherapy Association.

Source of Funding: Esa Unggul University and Indonesian Physiotherapy Association
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Riskesdas. Riskesdas 2018. Has Utama RISKESDA 2018. 2018;
2. Maratis J, Salam Z, Utama P. Perbedaan Efektivitas Visual Cue Training Dengan Gait Training Exercise Terhadap Kemampuan Fungsional Berjalan Insan Pascastroke. 2020;1(1):31–9.
3. Rafli M, Utama P. Beda Efek Mirror Therapy dan Proprioceptive Neuromuscular Facilitation (PNF) Terhadap Keseimbangan Dinamis pada Pasien Pascastroke. 2020;
4. Nisa Q, Maratis J. Hubungan Keseimbangan Postural Dengan Kemampuan Berjalan Pada Pasien Stroke Hemiparesis. 2019;19:83–9.
5. Kemenkes. Kurang Aktivitas Fisik Berpotensi Alami Penyakit Tidak Menular [Internet]. 2019. Available from: https://www.kemkes.go.id/article/view/19090400004/kurang-aktivitas-fisik-berpotensi-alami-penyakit-tidak-menular.html

How to cite this article: Jerry Maratis, Duta Liana, Erlina Puspitaloka Mahadewi, Kesit Ivanali, Trisia Lusiana Amir, Martin Saputra. The relationship between walking ability and fall risk in poststroke patients. *International Journal of Research and Review*. 2023; 10(12): 121-125. DOI: *10.52403/ijrr.20231215*

******