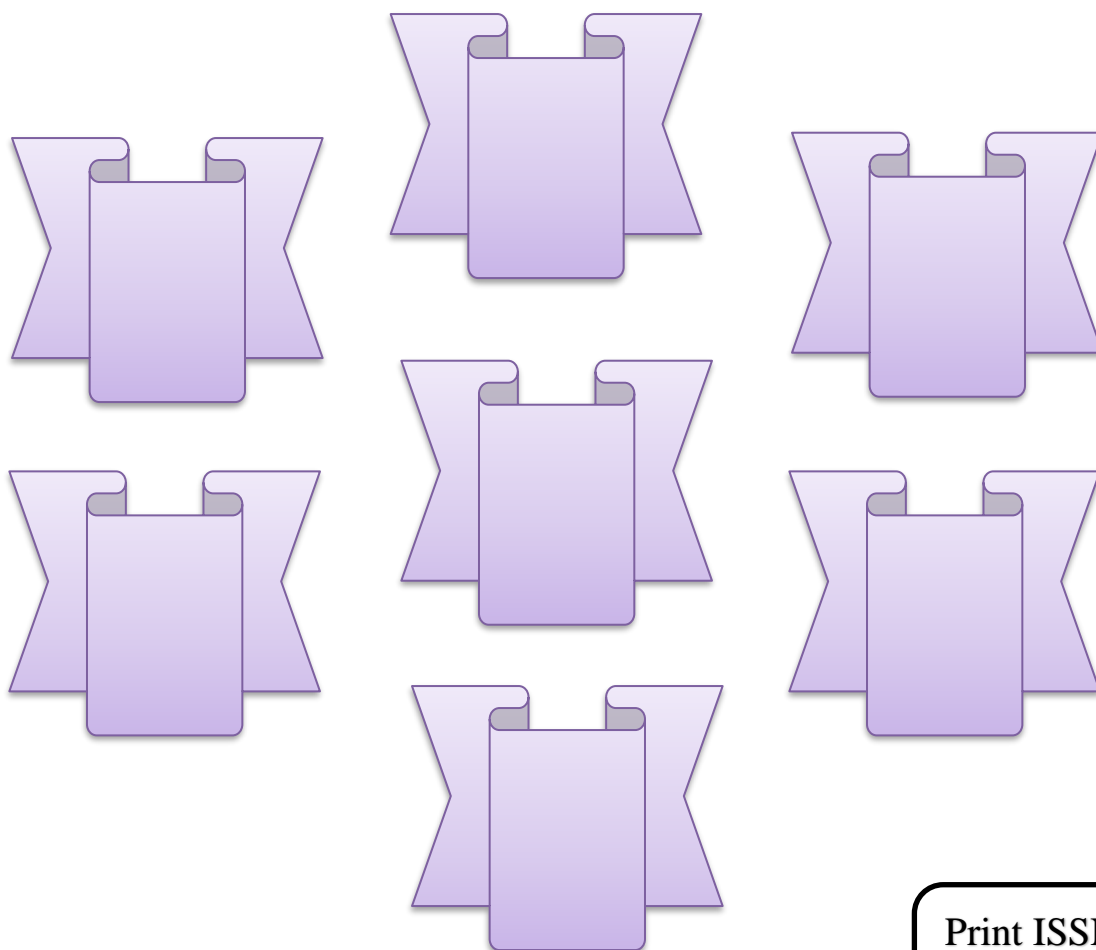


INTERNATIONAL JOURNAL OF MEDICAL ARTS



Volume 5, Issue 7, July 2023

<https://ijma.journals.ekb.eg/>



Print ISSN: 2636-4174

Online ISSN: 2682-3780



Available online at Journal Website
<https://ijma.journals.ekb.eg/>
 Main Subject [Psychiatry]



Original Article

Psychiatric Disorders in Patients with Acute Ischemic Stroke

Amgad Ahmed Meshref Gabr ^{*1}, Hossam Elkhatib ², Samah Hamed Rabei ³,
 Ahmed Essam Mahdy Ebraheem ⁴, Mohamad Abdelfattah Sakr ⁴

¹ Department of Psychiatry, Faculty of Medicine, Al-Azhar University, Cairo, Egypt

² Department of Psychiatry, Faculty of Medicine, Misr University of Science and Technology, Cairo, Egypt

³ Department of Psychiatry, Faculty of Medicine, Helwan University, Helwan, Egypt

⁴ Department of Neurology, Faculty of Medicine, Misr University of Science and Technology, Cairo, Egypt

ABSTRACT

Article information

Received: 15-06-2023

Accepted: 10-07-2023

DOI: 10.21608/IJMA.2023.217901.1709.

*Corresponding author

Email: dr.amgdgabr@gmail.com

Citation: Gabr AAM, Elkhatib H, Rabei SH, Ebraheem AEM, Sakr MA. Psychiatric Disorders in Patients with Acute Ischemic Stroke. IJMA 2023 July; 5 [7]: 3412-3418. doi: 10.21608/IJMA.2023.217901.1709.

Background: Stroke is a big health issue all over the world and it can cause mental and physical problems that happen often and make it hard to live a normal life. Besides, there is proof that these after-effects slow down healing. Many people experience mental problems after having a stroke, both immediately and for a long time afterwards. Brain damage can be caused by problems with brain connections, blood flow, energy use, nerve damage, and pressure from bleeding in the skull.

Aim of the work: This study aimed to identify mental disorders among in-hospital patients with acute ischemic stroke.

Patients and Methods: This was a cross-sectional study. 69 Patients with a diagnosis of acute ischemic stroke admitted underwent neuropsychiatric evaluations.

Results: We looked at 69 people for our study. 31% of them had mental health problems like Panic disorder, generalized anxiety, depressive episode, and psychotic disorders. Most of them were men and around 67 years old on average. The age of a person, their symptoms related to their nervous system, and where the area of damage is in their brain are related to possible mental health problems.

Conclusion: Doctors need to check if stroke patients have mental health problems and treat them as part of their recovery.

Keywords: Psychiatric disorders; Ischemia; Stroke.



This is an open-access article registered under the Creative Commons, ShareAlike 4.0 International license [CC BY-SA 4.0] [<https://creativecommons.org/licenses/by-sa/4.0/legalcode>].

INTRODUCTION

A stroke is a big problem that can cause a person to become disabled or even die. This happens a lot around the world. In the US, there are 610,000 new cases every year, but we don't have as much information about new cases in other places. Stroke is the biggest reason why people die, causing around 100,000 deaths each year ^[1]. In the past few years, fewer people are dying from stroke all around the world. The decrease in stroke cases may be because treatments for stroke have gotten better and doctors are preventing strokes by treating high blood pressure ^[2].

As more people get better treatment for a sudden stroke, more of them will survive but some may still have difficulty doing things. Doctors are paying more attention to things that can make a stroke worse since it can cause big changes in someone's life ^[3]. People who had a stroke may also experience mental health issues like feeling very worried, sad, or having no motivation ^[4].

People who have had a stroke can have trouble with their behavior, but doctors haven't focused on it as much as they have with problems like difficulty moving, speaking, and thinking. Psychiatric problems can affect a person's brain recovery and also cause problems with their work and relationships. This can make them feel less confident and lower their quality of life. It can also affect their family members and caregivers ^[4].

PATIENTS AND METHODS

This was a cross-sectional study. Patients with a diagnosis of acute ischemic stroke admitted underwent neuropsychiatric evaluation.

Inclusion criteria: 1] Acute ischemic stroke patient confirmed by clinical examinations and neuroimaging, 2] Aged ≥ 18 years, and 3] Informed consent from patient or relatives.

Exclusion criteria: History of neurological disorder other than ischemic stroke, psychiatric disorder or other medical conditions that may affect the neurological assessment.

Ethical considerations: Once the patients were told all the details and purpose of the study, they signed a paper to show they agreed to take part. The College of Medicine at Al-Azhar Cairo

University's Ethical Research Committee said it was okay to do the study.

Methods

The researchers gathered information about the people's age, gender, health history, and medicine use. They also checked their brain scans, heart tests, and physical measurements like weight and blood pressure. Investigations done like CT chest to detect any pathology

Neurological and functional status evaluation: Before the stroke happened, doctors studied how well the person functioned. They also looked at the person's brain and body function differences caused by the stroke. This included looking at scans of the person's brain. The brain evaluation was separate from the evaluation of the person's mental health.

Psychiatric assessment

People in rehab were chosen for the study and tested 2 weeks after they started in a special rehab center. Around 1 month after their stroke. The main writer talked to everyone in a special way to find out if they had certain mental health problems like being very sad or very anxious. They also talked to family members to help figure out what was wrong. According to DSM-V, the types of sadness issues are MD, dysthymia, and adjustment disorder with depressed mood.

The SCL-90-R is a test that asks you questions about how you feel. It has 90 questions with 5 possible answers. The test measures different types of symptoms like feeling sad, anxious, or paranoid. This tool is commonly used to check for signs of mental health problems. The Chinese version of the tool has been proven to be a good test. If someone gets a higher score, it means they have more serious mental health symptoms ^[5].

Statistical analysis of the data: Information was put into the computer and studied using a program called IBM SPSS version 20. The location of IBM headquarters is in Armonk, New York. We used numbers and percentages to explain qualitative information. We used a test called Kolmogorov-Smirnov to check if the information was distributed normally. We talked about numbers and used different ways to describe them, like the smallest and biggest number, the average, how much the numbers

vary from the average, the middle number, and the range between the middle number and the highest number. The results were considered important at a level of < 0.05%.

RESULTS

The study looked at 69 people. 31% of them had mental health problems, like panic attacks, chronic worry, feeling sad, and hearing things that weren't there. More men than women had these problems, and the average age of all the participants was 67. 17 years old. Among the people with mental health problems, more women than men had them at all ages.

Neurological diseases can cause weakness, difficulty speaking [dysphasia] and weakness on one side of the body [hemiparesis]. In the cases studied, many people with dysphasia also had psychiatric or neurological problems. The most common symptoms were left-sided weakness [hemiplegia] in 32% of cases and right-sided weakness in 29% of cases. Other symptoms included difficulty with movement on one side of the body [hemiataxia], trouble speaking clearly [dysarthria], vision loss on one side of the visual field [hemianopia] and reduced sensation on one side of the body [hemihypothesia].

The parts of the brain that had an infarction were the Frontal lobe in 6% of cases, Temporal lobe in 10%, Parietal lobe in 17%, occipital lobe in 4%, Basal ganglia in 13%, thalamus in 5%, Cerebellum in 3%, and Pons in 11%.

We used a test called SCL-90 to check for mental health problems. People with psychotic disorders had higher scores than people without these disorders. Their scores were 195. 1 on average, while the others had scores of 133. 7

59.4% of the cases had DM and HTN, 24. 6% of them had AF, 23. 2% had a condition called

IHD, 8. 7% had a condition where the immune system attacks the body called autoimmune disease, and 2. 9% had a condition called epilepsy. There was a strong connection found between AF and psychiatric disorders. A special scan called a Chest CT was done and it showed that 37. 7% of people had something wrong with their chest. There was a connection between this problem and mental health issues.

This study found that certain things like age, brain problems, and where a stroke happened can be linked to mental health problems. This was shown in a chart called "table 3". They used something called "multinomial regression" to figure this out.

Most of the patients who have depressive episodes are male [72. 2% out of 18 patients]. All patients with panic disorder are male [100% out of 2 patients]. Patients diagnosed with generalized anxiety, depressive episodes, and psychotic disorders usually have 2-3 other medical issues, while patients with normal mental health usually have no more than 2.

People with mental disorders that cause altered thoughts, feelings, and behavior, as well as those who experience extreme and persistent worry and sudden intense fear attacks, have weakness on their left side ranging from mild to severe. People with depression may have weakness on the right side of their body more often than the left. People with psychotic disorders might have a stroke in certain parts of their brain. People with depression mostly feel it more on the left side of their brain, and people with anxiety mostly feel it more on the right side. About half of people with depression and psychosis have chest x-ray results that show something is wrong. Most patients who have general anxiety also have abnormalities in their chest x-ray [71. 4% to be exact, which is slightly more than two-thirds of patients].

Table [1]: Relation between psychiatric and demographic data [n = 69]

		Total [n = 69]		Psychiatric				Test of sig.	p
		No.	%	Normal [n = 38]		Abnormal [n = 31]			
		No.	%	No.	%	No.	%		
Sex	Male	43	62.3	29	76.3	14	45.2	$\chi^2=7.057^*$	0.008*
	Female	26	37.7	9	23.7	17	54.8		
Age [years]									
Min. – Max.		25.0 – 90.0		41.0 – 90.0		25.0 – 86.0		t= 0.520	0.605
Mean ± SD.		67.17 ± 12.32		66.47 ± 11.89		68.03 ± 12.98			
Median [IQR]		67.0 [61.0 – 76.0]		66.50 [59.0 – 76.0]		72.0 [64.0 – 76.0]			

χ^2 : Chi square test; t: Student t-test.

Table [2]: Relation between psychiatric and chest CT [n = 69]

Chest CT	Total [n =69]		Psychiatric				χ^2	p
	No.	%	Normal [n = 38]		Abnormal [n = 31]			
	No.	%	No.	%	No.	%		
Negative	43	62.3	29	76.3	14	45.2	7.057*	0.008*
Positive	26	37.7	9	23.7	17	54.8		

Table 3. Multinomial regression of [presence and type of psychiatric disorders] on: age, sex, number of medical co-morbidities, neurological clinical picture, CT brain site of infarction, presence of chest X-ray positive findings

	-2 Log Likelihood of Reduced Model	Sig.
Age	108.268	0.903
Sex	115.424	0.085
Number of medical co-morbidities	116.458	0.056
Neurological clinical picture	118.199	0.027
CT brain site of infarction	129.644	0.000
Presence of chest X-ray positive findings	115.978	0.068

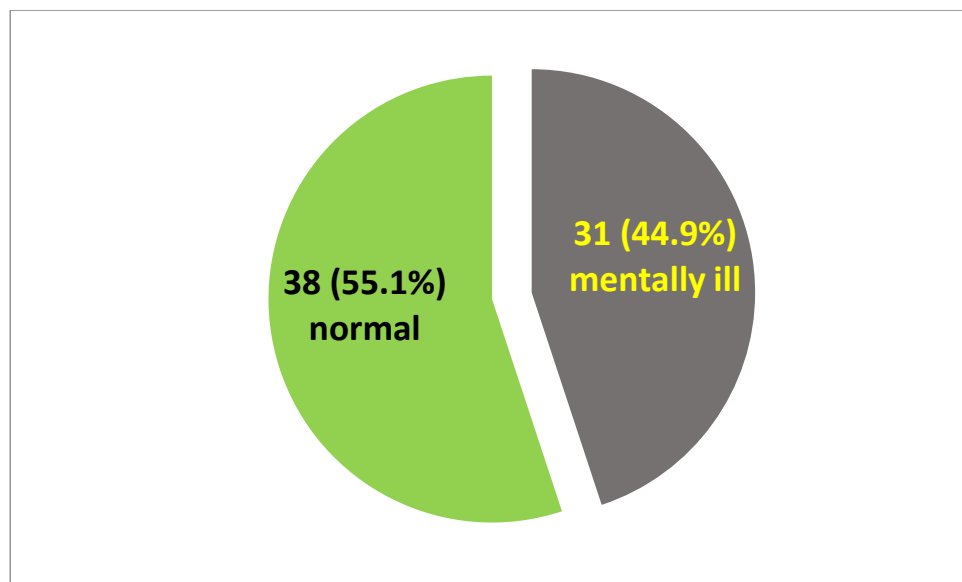


Figure 1: Pie chart showing rates of psychiatric disorders collectively

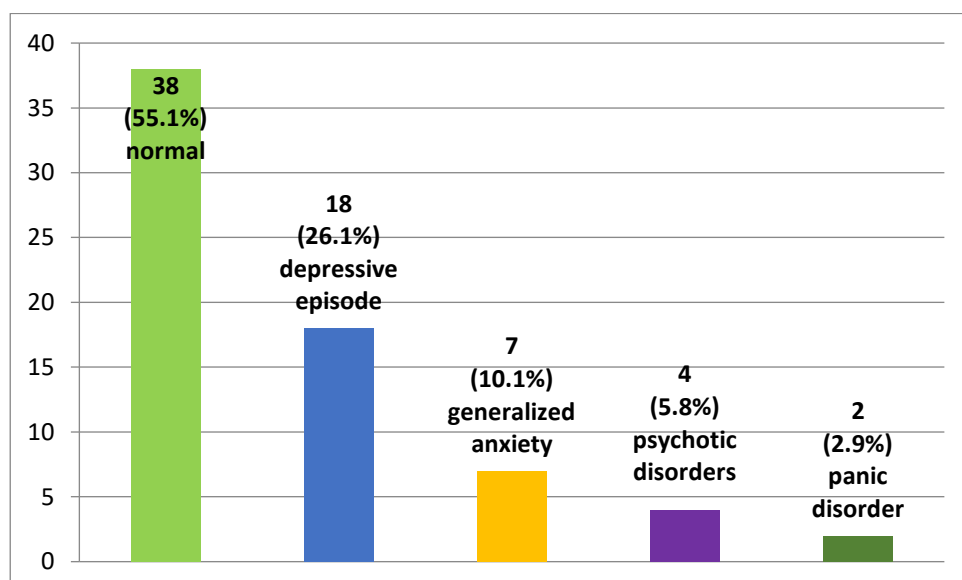


Figure 2: Column chart showing types and rates of psychiatric disorders

DISCUSSION

Many illnesses that affect the brain can cause mental health issues frequently. People with neurological problems may also have mental health problems. These mental health problems can make their life even more difficult. In a recent study, 69 people were looked at, and 31% of them had mental health problems.

A study found that after a person has a stroke, they can experience PSD [post-stroke depression] between 1 to 18 months later. The percentage of people who experience PSD does not change much over time, with around a quarter of people experiencing it at different points during the first year after their stroke [6].

One meta-analysis looked at 61 other studies with a lot of patients who had a stroke. They found that about 34% of these patients had depression [7]. Another study looked at 32 other studies where patients took medicine for depression. They found that about 31% of these patients had depression [8].

Many studies have looked at depression in different ways and found that the number of people who have it can range from 5% [9] to 84% [10].

The discrepancy between studies and our result this is because they used different methods and timing to measure it. Between 2001 and 2011, a study in Denmark looked at 157,243 people who were admitted to the hospital for the first time with new-onset PSD [which means they were feeling very sad and hopeless], and 160,236 people who lived nearby and didn't have PSD. The researchers followed both groups for 2 years. After a stroke, 25.4% of people may become depressed, while in the general population only 7.8% may experience depression [11].

In 2017, a study looked at 36 other studies about what causes people to become depressed after having a stroke. They found that the most common reason was if the person had a history of mental illness before the stroke. Other reasons included being female, younger than 70, and having a severe stroke that made it hard to do things. Not having support from family and friends also made it more likely for someone to become depressed after a stroke [12]. Another study in 2017 found that being male or female, young or old, or having certain social factors may not increase the likelihood of a particular risk [13].

A new study found that not being married and feeling very tired can increase the risk of PSA [14].

We found that many people had mental health problems. The most common one was feeling very sad and hopeless. Others included feeling very anxious or hearing and seeing things that aren't there. More men than women had these problems and they were often around 67 years old. The most common symptoms of neurological diseases were weakness, trouble speaking, and weakness on one side of the body. People who had trouble speaking also often had a mental health condition. When doctors looked at CT scans of the brain, they found that most of the damage was in the Parietal lobe, followed by the Basal ganglia, Pons, Temporal lobe, Frontal lobe, occipital lobe, thalamus, and Cerebellum.

A study found that after someone has a stroke, they may experience something called PSD for up to 18 months. The percentage of people who experience PSD doesn't change much over this time period [6].

We found that using a test called SCL-90 helped us see if someone had mental health problems. The people with psychotic disorders had much higher scores on the test compared to the people who were normal.

Xu et al. [5] found that people who had a stroke at a young age had higher scores on a test measuring emotional distress compared to healthy people. The difference was significant [which means it was important] and it cost either a little or a lot [because " $p < 0.01$ or 0.005 " means "the difference was significant"]. In a group of young people who had a stroke caused by poor blood flow, about 22 out of 100 of them [or 81 out of 364] had problems with their emotions or thinking.

All nine areas of SCL-90-R were linked to feeling like there were problems with thinking. This matches previous studies that found a connection between feeling sad and having trouble with thinking in people who have minor memory problems or have had a stroke [16].

A recent research study found that a person's age, symptoms of neurological problems, and the location of a brain injury on a CT scan were linked to the chance of having mental health issues. The researchers used a statistical method called Multinomial regression to analyze these factors.

In a study by Inam *et al.* [17], they looked at how age, gender, high blood pressure, diabetes, and having a stroke were related to having a mental health condition. Having a stroke makes it more likely to also have a mental health problem. This is based on a study that found the risk is 3.351 times higher for people who have had a stroke compared to those who haven't. The study also found that this risk falls within a range of 95% certainty, and that the likelihood of this happening is considered statistically significant. Being old, male, having diabetes or high blood pressure did not seem to affect the likelihood of having a mental health problem.

We did a study to see if the type of mental illness was related to where in the brain a stroke happened. We discovered that men tended to have depressive episodes and panic disorder more often.

People who have conditions like psychosis, anxiety and panic problems tend to have weakness or paralysis on their left side. People with depression may have weakness or paralysis on their right side. People with psychotic disorders may have damaged areas in the brain stem or thalamus. People with depression may have problems on their left side of the brain. People with anxiety may have issues on their right side of the brain.

A research by House and others discovered that having damage on the left side of the brain did not cause worse or longer-lasting feelings of sadness, and having damage on the right side of the brain did not cause an elevated mood. The sickness of major depression is not as common as people thought before, and it is not connected to a specific area in the left side of the brain. There was a slight connection between mood symptoms and how close the stroke was to the front of the brain. But there was no difference in how strokes on the right or left side of the brain affected mood [18].

Norepinephrine and serotonin have been consistently linked to psychiatric mood disorders such as depression and bipolar. The high plasma norepinephrine in the stroke group is consistent with an increase in peripheral sympathetic activity which could produce the cardiac abnormalities of cerebral infarction [19].

Conclusion: Doctors need to check if stroke patients have any mental health problems and include this in their treatment plan.

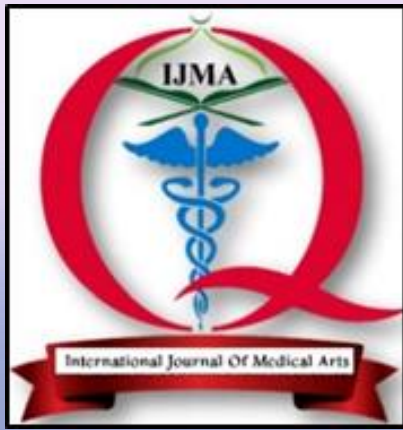
Funding: No funding sources.

Conflict of interest: None declared.

REFERENCES

1. Shahbandi A, Shobeiri P, Azadnajafabad S, Saeedi Moghaddam S, Sharifnejad Tehrani Y, Ebrahimi N, *et al.* Burden of stroke in North Africa and Middle East, 1990 to 2019: a systematic analysis for the global burden of disease study 2019. *BMC Neurol.* 2022; 22, 279. doi: 10.1186/s12883-022-02793-0.
2. Kuriakose D, Xiao Z. Pathophysiology and Treatment of Stroke: Present Status and Future Perspectives. *Int J Mol Sci.* 2020 Oct 15;21[20]:7609. doi: 10.3390/ijms21207609.
3. Chohan SA, Venkatesh PK, How CH. Long-term complications of stroke and secondary prevention: an overview for primary care physicians. *Singapore Med J.* 2019 Dec; 60[12]:616-620. doi: 10.11622/smedj.2019-158.
4. Pedroso VSP, Brunoni AR, Vieira ÉLM, Jorge RE, Lauterbach EC, Teixeira AL. Early psychiatric morbidity in a Brazilian sample of acute ischemic stroke patients. *Clinics [Sao Paulo].* 2018;73:e55. doi: 10.6061/clinics/2018/e055.
5. Xu D, Chu X, Wang K, Wei L, Xu Y, Huang X, *et al.* Potential Factors for Psychological Symptoms at Three Months in Patients with Young Ischemic Stroke. *Biomed Res Int.* 2021 Feb 9;2021:5545078. doi: 10.1155/2021/5545078.
6. De Ryck A, Fransen E, Brouns R, Geurden M, Peij D, Mariën P, De Deyn PP, Engelborghs S. Poststroke depression and its multifactorial nature: results from a prospective longitudinal study. *J Neurol Sci.* 2014 Dec 15;347[1-2]:159-66. doi: 10.1016/j.jns.2014.09.038.
7. Hackett ML, Pickles K. Part I: frequency of depression after stroke: an updated systematic review and meta-analysis of observational studies. *Int J Stroke.* 2014 Dec;9[8]:1017-25. doi: 10.1111/ijvs.12357.
8. Ladwig S, Zhou Z, Xu Y, Wang X, Chow CK, Werheid K, Hackett ML. Comparison of Treatment Rates of Depression After Stroke Versus Myocardial Infarction: A Systematic Review and Meta-Analysis of Observational Data. *Psychosom Med.* 2018 Oct;80[8]:754-763. doi: 10.1097/PSY.0000000000000632.

9. Townend BS, Whyte S, Desborough T, Crimmins D, Markus R, Levi C, Sturm JW. Longitudinal prevalence and determinants of early mood disorder post-stroke. *J Clin Neurosci.* 2007 May;14[5]:429-34. doi: 10.1016/j.jocn.2006.01.025
10. Bar M, Skoloudik D, Roubec M. Post-stroke depression: A one year prospective follow-up study. *J Neurol Sci.* 2009;285:S172–S172. doi: 10.1016/S0022-510X[09]70658-6
11. Jørgensen TS, Wium-Andersen IK, Wium-Andersen MK, Jørgensen MB, Prescott E, Maartensson S, Kragh-Andersen P, Osler M. Incidence of Depression After Stroke, and Associated Risk Factors and Mortality Outcomes, in a Large Cohort of Danish Patients. *JAMA Psychiatry.* 2016 Oct 1;73[10]:1032-1040. doi: 10.1001/jama-psychiatry.2016.1932.
12. Shi Y, Yang D, Zeng Y, Wu W. Risk Factors for Post-stroke Depression: A Meta-analysis. *Front Aging Neurosci.* 2017 Jul 11;9:218. doi: 10.3389/fnagi.2017.00218.
13. Babkair LA. Risk Factors for Poststroke Depression: An Integrative Review. *J Neurosci Nurs.* 2017 Apr;49[2]:73-84. doi: 10.1097/JNN.0000000000000271.
14. Sanner Beauchamp JE, Casameni Montiel T, Cai C, Tallavajhula S, Hinojosa E, Okpala MN, *et al.* A Retrospective Study to Identify Novel Factors Associated with Post-stroke Anxiety. *J Stroke Cerebrovasc Dis.* 2020 Feb; 29[2]:104582. doi: 10.1016/j.jstrokecerebrovasdis.2019.104582.
15. Grambaite R, Hessen E, Auning E, Aarsland D, Selnes P, Fladby T. Correlates of Subjective and Mild Cognitive Impairment: Depressive Symptoms and CSF Biomarkers. *Dement Geriatr Cogn Dis Extra.* 2013 Sep 11;3[1]:291-300. doi: 10.1159/000354188.
16. van Rijnsbergen MW, Mark RE, de Kort PL, Sitskoorn MM. Subjective cognitive complaints after stroke: a systematic review. *J Stroke Cerebrovasc Dis.* 2014 Mar;23[3]:408-20. doi: 10.1016/j.jstrokecerebrovasdis.2013.05.003.
17. Inam MS. Psychiatric Morbidity Among the Patients of First Ever Ischaemic Stroke. *BJPsych Open.* 2022 Jun;8[S1]:S54-5. doi: 10.1192/bjo.2022.201.
18. House A, Dennis M, Warlow C, Hawton K, Molyneux A. Mood disorders after stroke and their relation to lesion location. A CT scan study. *Brain.* 1990 Aug;113 [Pt 4]:1113-29. doi: 10.1093/brain/113.4.1113.
19. Moret C, Briley M. The importance of norepinephrine in depression. *Neuropsychiatr Dis Treat.* 2011;7[Suppl 1]:9-13. doi: 10.2147/NDT.S19619.



International Journal

<https://ijma.journals.ekb.eg/>

Print ISSN: 2636-4174

Online ISSN: 2682-3780

of Medical Arts