

Post-Stroke Depression in Jordan: Prevalence Correlates and Predictors

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Background: Post-stroke depression is among the most frequent neuropsychiatric complications of stroke, and it is associated with poor prognosis and outcomes. This study aimed to assess the prevalence of depression; its correlates, and predictors among patients with stroke in Jordan. **Methods:** A cross-sectional, descriptive correlation design was used among 198 patients with stroke admitted to 9 hospitals all over Jordan. Depression was assessed using the validated hospital depression subscale (HDS) of the Hospital Anxiety and Depression scale. **Results:** Study patients (mean age 56.62 years [SD = 14.2], 53% were males) experienced high prevalence of depression (76%); of these, 51.6% were categorized as higher depression category (a case of depression; HDS = 11-21). Factors that correspondingly predicted higher depression categories were low level of education (odds ratio [OR] = 3.347, 95% confidence interval [CI] = 2.920-23.949, $P < .001$), having a preparatory level of education (OR = 8.363, 95% CI = 1.24-9.034, $P = .017$), having comorbid chronic diseases (OR = .401, 95% CI = .190-.847), being a smoker (OR = 2.488, 95% CI = 1.105-5.604, $P = .028$), patients who reported inability to perform daily activities by themselves (OR = 3.688, 95% CI = 1.746-7.790, $P = .001$), and patients with comorbid dysphasia (OR = 12.884, 95% CI = 4.846-34.25, $P < .001$). **Conclusions:** Post-stroke depression is a significant health problem among Jordanian patients with stroke and warrants serious attention. Clinicians need to consider these important predictors when assessing and managing depression among patients at risk. **Key Words:** Post stroke—depression—prevalence—chronically ill—Jordan.

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Introduction

Globally, stroke and ischemic heart disease were the foremost 2 causes of death and premature mortality in

2015.^{1,2} The recent improvements in medical health care increase life expectancy and decrease stroke mortality. Worldwide, mortality rates associated with stroke were decreased by 21.0%, since 2005.² However, they increase the number of stroke survivors who live with the consequences of stroke such as disabilities that affect their quality of life and put increased demands on health-care systems.³ It has been well acknowledged that stroke is one of the largest causes of serious long-term mental and physical disabilities.¹

Depression ranks first among all illnesses that cause disability.⁴ In particular, post-stroke depression (PSD) is among the most frequent neuropsychiatric complications of stroke, with a reported prevalence varying widely and ranging from 25% to 79%, either in the early or in the late stage following stroke.^{5,6} This percentage was found to be higher in developing countries, compared with the developed ones, which bear a disproportionate larger

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burden of stroke while owning fewer resources.⁷ Lack of modern treatment and rehabilitation facilities may play an important role in increasing the frequency of depression in developing countries.⁸⁻¹⁰

Besides its high prevalence, PSD has been associated with a poor prognosis. Depressive symptoms increased the risk of stroke morbidity and mortality.¹¹ Patients with depression have more severe deficits in activities of daily living, a worse functional outcome, and more severe cognitive deficits.^{12,13} Depression is considered as the strongest predictor of quality of life in stroke survivors and is associated with a significant increase in total health-care expenditure.^{14,15} Furthermore, high depressive symptoms have been associated with increased risk of stroke.¹⁶

Identifying factors that predict PSD rates and categories is vital. Studies revealed that depression levels were stable during the 18 months after first-ever stroke.¹⁷ However, depression scores were significantly higher among patients who had lower physical functioning in the acute phase, disability after stroke, history of depression before stroke, cognitive impairment, lack of social or family support, suffering anxiety, and unemployment of patients at the time of stroke. Specific patient characteristics, like age and gender, were not shown to predict depression. In addition, there were no associations between depression and other variables like the stroke subtype, lesion location, or laterality.^{5,9,18,19} Antidepressant medication may not always be suitable to treat depression after stroke, because of drug interactions, side effects, and poor compliance. Therefore, psychological treatments should be considered.¹³ Physicians and other health-care providers are usually aware of the emotional constituents of their stroke patients' illnesses, but the emotional and psychosocial dimensions of patients' illness are usually ignored because of physicians' lack of time to effectively assess and manage these aspects.^{20,21}

The incidence of stroke in the Middle East is lower than that in most developed countries, mainly because of the younger population. However, the younger population in the Middle East predicted that in the future, the impact of stroke will become an increased burden, and stroke will increasingly become a major health problem.²² Thus, more specific data on the epidemiology of stroke and related issues in the Middle East are needed.

To the year of 2020, epidemiologies of mental health disorders and psychosocial behaviors in relation to chronic illnesses are scientific research priorities for medical and pharmaceutical sciences in Jordan.²³ In Jordan, the body of knowledge regarding depression among stroke patients and its associated factors, which is the essence of their physical and psychological wellness, is still scarce. Therefore, this study was aimed to determine the prevalence of depression among patients with stroke in Jordan; to assess associations between demographic, socioeconomic, and clinical factors with PSD among Jordanian

patients with stroke; and to determine predictors of PSD among Jordanian patients with stroke.

Material and Methods

A cross-sectional prospective design was used with a convenience sample of 198 Jordanian patients who were recruited from multi-hospitals evenly distributed throughout Jordan. Nine major hospitals representing the 3 major health sectors in Jordan, military, governmental, and educational (university teaching hospitals), were involved. Hospitals affiliated with these health sectors were divided according to their geographical area into 3 strata: the North, the Middle, and the South. Three hospitals representing the 3 major sectors were then randomly selected from each stratum. Data collection occurred between April and June 2017.

All patients experiencing a first or subsequent ischemic or hemorrhagic stroke were included in the study. Stroke diagnosis was confirmed by a senior neurology specialist using computed tomography or magnetic resonance imaging. Inclusion criteria included patients diagnosed with stroke, 18 years or older, and willing to provide written informed consent. The exclusion criteria were patients diagnosed with subarachnoid hemorrhage or reversible neurovascular status (transient ischemic attack, because of differences concerning etiology, risk factors, and management); patients diagnosed with a mental illness or major psychiatric illness (such as dementia, confusion, psychosis, and depression); patients with a history of taking psychotropic agents; patients having major hearing or visual difficulties; patients having a life-threatening or associated major illness (such as renal failure or cancer); and patients having speech impairment (such as aphasia). Ethical approval for the study was obtained from the ethical committees at the selected hospitals before conducting the study. A written informed consent was obtained from all patients after they were fully informed about the study purpose and objectives. All patients were assigned a code number to ensure confidentiality.

Face-to-face interview using a structured questionnaire was used to collect data. The interviews were conducted by 3 trained research nurses (1 from each geographical area) who are registered nurses and had at least 10 years' experience in providing care for stroke patients. Those nurses attended a 4-day training program concerning the study purpose, questionnaire, protocol, and strategies for conducting interviews. A pilot study with 15 patients (5 patients from each stratum) was conducted with the attendance of 1 of the 3 principal researchers to assure the consistency in conducting the interviews. The patients' medical records were reviewed by the research nurse and the research coordinator (the head nurse of the neurointensive care units or the head nurse of the medical floor) to confirm diagnosis and determine patient eligibility. Eligible patients were

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