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Prevelance of fatigue among chronic stroke subjects

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Abstract
Objective: Fatigue is still a relatively unexplored, often neglected condition. The fatigue often manifests as physical and mental lack of energy, and many patients mention fatigue as one of the most difficult sequels to which they have to adjust. The objective of study finding the fatigue level of stroke population.
Method: A cross sectional study conducted on a chronic stroke subject finding the fatigue levels. The fatigue assessment form was distributed to 120 stroke patients and individual response were collected.
Results: The results were calculated using MS Excel and it was found that the mean of Fatigue severity score among participants was 36.71 with standard deviation of 7.25
Conclusion: This study concluded that there increase in fatigue levels in individuals suffering from stroke.

Keywords: stroke, fatigue, prevalence, fatigue severity

Introduction

Stroke is a neurological disorder characterized by blockage of blood vessels. Clots form in the brain and interrupt blood flow, clogging arteries and causing blood vessels to break, leading to bleeding. Rupture of the arteries leading to the brain during stroke results in the sudden death of brain cells owing to a lack of oxygen. Stroke can also lead to depression and dementia [1].

According to World Health Organization defined stroke as 'rapidly developed clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than of vascular origin' [2].

Stroke is classified on the basis of its etiology as either ischemic (87%) or hemorrhagic (13%). Ischemic strokes are produced by occlusion of a cerebral artery [thrombotic or atherosclerotic (50%), embolic (25%) and micro artery occlusion, "lacunar stroke", (25%)]. Hemorrhagic stroke is caused mainly by spontaneous rupture of blood vessels or aneurysms or secondary to trauma [3].

According to the Global Burden of Diseases (GBD), stroke is the second leading cause of death worldwide. The cumulative incidence of stroke ranged from 105 to 152/100,000 persons per year, and the crude prevalence of stroke ranged from 44.29 to 559/100,000 persons in different parts of the country during the past decade. These values were higher than those of high-income countries [4]. The burden of stroke increased by 25% among adults aged 20-40 years. About 12% of stroke in India occurs in the population younger than 40 years. The risk of stroke increased by 9% per year in men and 10% per year in women [5].

Primary risk factors for stroke include high blood pressure, diabetes, lack of physical activity, and alcohol consumption, and the main symptoms of stroke are headache, difficulty in walking, seizures, impaired vision, and dysesthesia [6].

Common clinical manifestation in stroke includes sensory involvement, motor impairment, perception and cognition dysfunction, dysphagia, apraxia and agnosia, bladder and bowel impairment, balance impairment, depression etc. Stroke is the second leading cause of death. It is one of the leading causes of long-term disability in the United States, especially in the elderly population in which stroke incidence is highest. From the 795,000 new sufferers of stroke, 26% remain disabled in basic activities of daily living and 50% have reduced mobility due to hemiparesis, 83% suffers from balance disability [7].

Post-stroke fatigue (PSF) is described as 'a feeling of early exhaustion with weariness, lack of energy and aversion to effort that develops during physical or mental activity and is usually not ameliorated by rest. Fatigue is a multidimensional motor-perceptive, emotional and cognitive experience. Fatigue can be classified as either objective or subjective; objective fatigue is defined as the observable and measurable decrement in performance occurring with the repetition of a physical or mental task, while subjective fatigue is a feeling of early exhaustion, weariness and aversion to effort. Post-stroke fatigue is generally thought to be a primary fatigue, but many researchers have proposed several contributing factors specific to post-stroke fatigue, such as de-conditioning, physical impairment, disuse, sleep disorders, medications side effects and depression [8].

The causes of fatigue are multidimensional and interrelated, a considerable range of fatigue management options are available, including cause-specific treatments, pharmacological intervention, and non-pharmacological interventions, including educational programs. For example, stroke patients who have been inactive and/or ill for periods of time may have nutritional or metabolic deficits resulting in fatigue. Use of psycho stimulants and antidepressants (where fatigue is intermingled with depression) may offer some relief from the symptoms of fatigue related to HIV and

multiple sclerosis. Several non-pharmacological interventions have also been linked to reduced fatigue including therapeutic recreation and social‐activities, and complementary activities such as biofeedback, relaxation and meditation, music, and pet therapy; which are thought to offer benefits through distraction and stress reduction which may ameliorate the impact of fatigue. Hence, the need of study finding the fatigue level of stroke population [9].

Methodology

The primary data were collected from ESIC hospital and National institute of mental health and neuroscience (NIMHANS) hospital. The subjects included were: (i) Ambulant stroke subjects (with or without assistance), (ii) Brunnstrom stages >3, (iii) Males and females of the age group: 40-70 years, (iv) Subject with 1st episode of stroke. The exclusion criteria were: (i) Subjects with other neurological impairments, (ii) Subjects with musculoskeletal disorders, (iii) Subjects who are non-cooperative.

Outcome Measure

Fatigue severity scale (FSS)

The fatigue severity scale (FSS) is a method of evaluating the impact of fatigue. The FSS is a short questionnaire that requires to rate level of fatigue. The FSS questionnaire contains nine statements that rate the severity of fatigue symptoms. Each statement and circle a number from 1 to 7, based on how accurately it reflects condition during the past week and the extent to which you agree and disagree that the statement applies. (i) A low value 1 indicates strong disagree with the statement, whereas a high value 7 indicates strong agree. (ii) It is important that circle a number (1 to 7) for every question [10]

Procedure

Ethical clearance was obtained from the Institutional Ethical Committee; the purpose of the study was explained. All subjects were screened for inclusion and exclusion criteria before their recruitment in the study. A written informed consent was obtained from the study subjects. All the subjects diagnosed with stroke undergoing medical treatment. The fatigue assessment from were distributed to 120 stroke patients and individual response were collected by the therapist.

Data Analysis

Data analysis done by MS excel to generate table.

Results

The majority of the stroke survivors that participated in the study were males (77%) and females (23%). Mean (SD) age 60.7 respectively (Table 1).

Prevalence of Fatigue Among Chronic Stroke Subjects

Table 1: Characteristics of subjects

Characteristics	Value
Age(Mean ± SD)	60.7±5.65
Gender(Male/Female)	92/28

Table 2: Values for Fatigue Severity Score Scale

Scale	Score
Fatigue Severity Score(Mean ± SD)	36.71±7.25

Fatigue is found on patients the fatigue severity scale (>36.7) table 2

Discussion

The present study aimed to evaluate fatigue on chronic stroke patients. In our study, the FSS score measured was the only independent predictor of an increase in fatigue over time. Nevertheless, a model including the FSS score still poorly predicted an increase in post stroke fatigue. Our findings also indicate that post stroke fatigue is experienced by the majority of stroke patients. Fatigue was a common problem in a sample of stroke patients recruited through a clinical service, with 61.5% reporting that fatigue was a significant problem for them and 37.5% scoring above the cut-off for fatigue on the FSS. These findings further highlight the importance of post-stroke fatigue [11]

Our finding, where 62% of stroke patients had FSS scores ≥4 points, indicates that moderate to high fatigue is not uncommon in post stroke patients. In comparison, previous studies have found that the prevalence of post stroke fatigue ranged from 39% to 68% [12] Although fatigue is a known problem after stroke, there have been few studies on the subject. Leegaard (1983 was one of the first who documented its prevalence. In a hospital-based study, he found that 75% of stroke survivors below the age of 70 suffered from fatigue 6–26 months after stroke onset. In a registry-based study, Glader *et al*. (2002) found that 39% of stroke survivors often felt tired 2 years after the stroke [13]. There is no generally accepted definition of fatigue, there is no golden standard to measure post stroke fatigue either. Our study used the FSS to measure fatigue. Although this is a widely accepted and used scale to measure fatigue in stroke populations this choice may have influenced the results [14]

The cause of post-stroke fatigue is multifactorial as suggested by our multivariate analyses which showed that post-stroke fatigue was independently associated with depression, leucoaraiosis, myocardial infarction, diabetes mellitus, pain, and sleeping disturbances. Others have also reported post-stroke depression to be associated with pain and sleep disturbances. Fatigue has also been reported among patients with diabetes mellitus [15].
Fatigue is essentially subjective, however, when it is clinically significant, it may often manifest as both physical and mental lack of energy, thus impairing the quality of life. Many patients report fatigue as one of the most difficult sequels to which to adjust [16].

Conclusion

This study concluded that there increase in fatigue levels in individuals suffering from stroke. Fatigue is an important post-stroke impairment and its impact on daily life increased during the post stroke. Future research should focus on a more detailed exploration of the determinants of post-stroke fatigue and on evaluating interventions for this.

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