

Prevalence of post stroke fatigue and its severity in stroke survivors in Bangalore: A descriptive study

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Abstract

Background and Objectives: Stroke is the most frequent cause of disability, and fatigue is one of the most common complaints after Stroke. In recent years, post-stroke fatigue (PSF), one of the most common enduring and disabling complaints after stroke, has been increasingly recognized. Fatigue is a multidimensional motor perceptible, emotional and cognitive experience. It is known to be an important predictor of functional limitation, dependency, institutionalization and death rate after stroke. The aim of the study was to find the prevalence of post stroke fatigue and its severity in stroke survivors.

Methods: Ninety stroke patients were selected as per the inclusion and exclusion criteria. The procedure was explained and written consent was taken. Demographic data of the subjects were collected and recorded. The subjects were administered the fatigue question from the HUNT-3 survey and Fatigue Severity Scale to obtain the self-reported fatigue status.

Results and Conclusion: Out of 90 subjects, 66% reporting fatigue while 34% did not report fatigue in HUNT3 Survey Questionnaire. Talking about fatigue severity current study found 68% of fatigue severity in Fatigue Severity Scale which overall indicate that Post-stroke fatigue was a common complaint in a stroke survivors.

Keywords: fatigue, severity, scale, functional limitation, dependency

Introduction

Stroke is the most frequent cause of disability, and fatigue is one of the most common complaints after Stroke ^[1]. Stroke is the devastating of all neurological diseases, often causing death or gross physical impairment or disabilities ^[2]. It became one of the leading causes of death and disability in India. The few reasons for a rise in Stroke burden in India include smoking, urbanization, increasing longevity and changes in lifestyle.

Talking about the adverse long term consequences, there are several long term consequences such as recurrent stroke, epileptic seizure, infections-urinary tract infection, chest infection, mobility related-falls, pressure sores, thrombo-embolism-deep venous thrombosis, pulmonary embolism, pain—shoulder pain, and psychological-depression, anxiety ^[3]. Among all the consequences following stroke, Post Stroke Fatigue (PSF) has been increasingly seen in around 30 to 72% of stroke survivors ^[4, 5, 6].

In recent years, post-stroke fatigue (PSF), is one of the most common enduring and disabling complaints after stroke, has been increasingly recognized ^[7, 8]. Fatigue is a multidimensional motor perceptible, emotional and cognitive experience ^[9]. It can be classified as objective and subjective fatigue ^[10]. 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 which is also known as pathological fatigue is a feeling of early exhaustion, weariness and aversion to effort and usually not ameliorated by rest ^[9].

Perceptions of fatigue are a common complaint among older people and especially for those with a range of chronic

diseases like stroke ^[11]. The pathogenesis of post stroke fatigue is unclear. One hypothesis is that fatigue might be triggered by physical inactivity, which leads to physical deconditioning, thus making physical activity more fatiguing and leading to further avoidance of activity and persistence of fatigue ^[12]. But many researchers have proposed several contributing factors specific to post stroke fatigue, such as, physical impairment, cortisol dysregulation, white matter lesions, sleep disorder, medication side effects and depression ^[13]. Several studies demonstrate that post-stroke fatigue is related to pre-stroke fatigue, poor physical functioning, dependency in activities of daily living and depression ^[14].

Post Stroke Fatigue significantly impacts the patients' life. It has been identified as one of the worst symptoms, prohibiting patients from living a normal life ^[13, 15] negatively impact patients' social participation and quality of life. It also has a negative impact on their rehabilitation outcomes, including participation in rehabilitation therapy, return to work, quality of life and functional independence. Thus, Post Stroke Fatigue is a multidimensional phenomenon reported by stroke survivors. It is known to be an important predictor of functional limitation, dependency, institutionalization and death rate after stroke.

With a rise in the stroke epidemiology in India in the recent years, there is a greater need to address this disabling condition more effectively and holistically from a rehabilitation perspective and it is imperative that it requires a multi-dimensional strategy to achieve a better outcome. A reporting of fatigue after stroke almost always is disabling to the patient and hinders the overall progress and recovery and needs to be addressed pragmatically.

In the Indian context there is limited literature and evidence regarding the phenomenon of fatigue and a better understanding in the context of Post Stroke Fatigue (PSF), its prevalence and severity with respect to the daily life activities can have wide spread implications in the rehabilitation process and overall wellbeing of a stroke survivor. So, this study is intended to find out the prevalence of fatigue and its severity in stroke survivors.

Methods

Source of data

- Out Patient Department- Neurological rehabilitation unit, RV College of Physiotherapy Bangalore.
- Neurological rehabilitation/ Stroke rehabilitation units in Bangalore.

Sample and sampling techniques

With an assumption of prevalence of post stroke fatigue among stroke survivors (atleast 70%) 10% margin of error and 90% confidence interval the sample size of N=90 was arrived at for the present study. Sampling technique was done by convenient sampling.

Participants

All subjects with a diagnosed episode of stroke and in different phases of recovery were assessed for eligibility criteria. Inclusion criteria were a subjects with a clinical diagnosis of Stroke, all genders will be included, subjects who are able to communicate (verbal/nonverbal). Exclusion criteria were medically unstable subjects, subjects having severe cognitive deficits (e.g. Hemi-neglect, Sensory aphasia etc), co-morbid conditions that may result in fatigue (eg, asthma), currently in another research study that might affect fatigue or add significant burden to participants.

All subjects were informed about the nature of the study and written informed consent was obtained. The study was approved by ethical committee of RV College of Physiotherapy.

Procedure

All the subjects were included in the study based on selection criteria. The subjects were first administered a single item fatigue questionnaire from the HUNT3-survey.

HUNT3 survey

This is a single question about weariness/fatigue

“Do you feel, for the most part, strong and fit or tired and worn out?”. There are seven response categories which range from 1 to 7.

Scoring; “1 = very fit and healthy” to “7 = very tired and worn out”. Fatigue is score as ≥ 5 .

Following HUNT3-survey question, the severity of fatigue in stroke with respect to daily life of the subject were evaluated by using Fatigue Severity Scale (FSS).

Fatigue Severity Scale (FSS)

The FSS consists of answering a short questionnaire that

requires the subject to rate his or her own level of fatigue. The scale comprises 9 statements about fatigue, such as ‘fatigue causes frequent problems for me’ and ‘fatigue interferes with my work, family or social life’. Patients were asked to choose a number from 1 to 7.

Scoring;

- 1= complete disagreement with the statement
- 7 = complete agreement with the statement

The minimum score is 9 and maximum score is 63. Higher the score greater the fatigue severity. A cut-off score of 44 was used to determine whether patients had significant severity of fatigue or not.

After performing the above mentioned questionnaire, the data’s collected will be statistically analyzed.

Statistical method

The Microsoft word, Excel 2016 version and SPSS version 16 was used to analyze all data. Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean \pm SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance.

Data collected for the study were analyzed and results are given in terms of test materials, tables and figures in following.

Results

Table 1: Age distribution of subjects studied

Age in Years	No. of subjects	Percentage
40-49	6	6%
50-59	33	37%
60-69	41	46%
70-79	10	11%

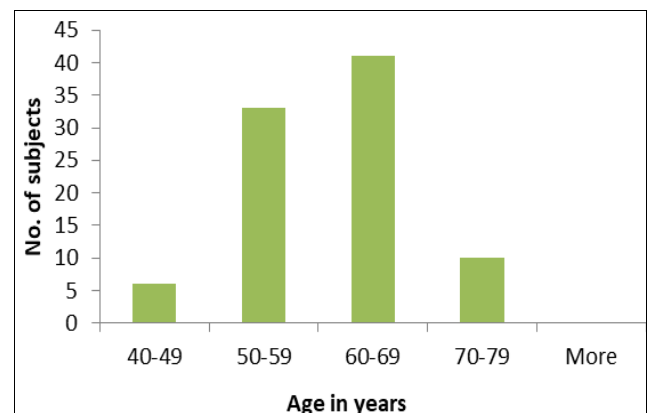


Fig 1

The above table and graph shows that out of 90 subjects, 6% were between the age group 40-49 years, 37% were between 50-59 years, 46% between 60-69 years and 11% were between 70-79 years.

Table 2: Gender distribution of subjects studied

Gender	No. of sample	Percentage
Female	35	39%
Male	55	61%

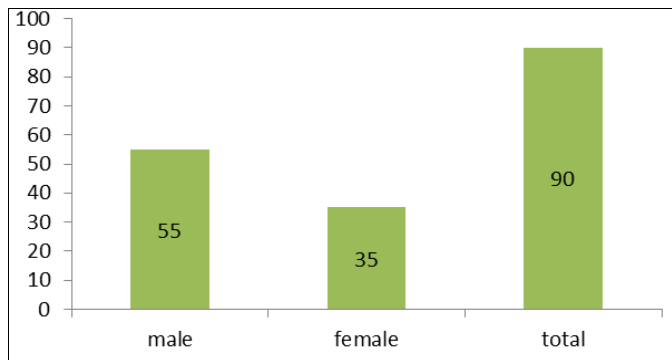


Fig 2

The above table and graph shows that out of 90 subjects, 61% (55 subjects) were male and 39% (35 subjects) were female.

Table 3: Post Stroke Duration distribution of subjects studied

Post stroke duration in month	No. of subjects	Percentage
0-3 (acute)	3	3%
4-11 (sub-acute)	10	11%
More than 12 (chronic)	77	86%
Total	90	100%

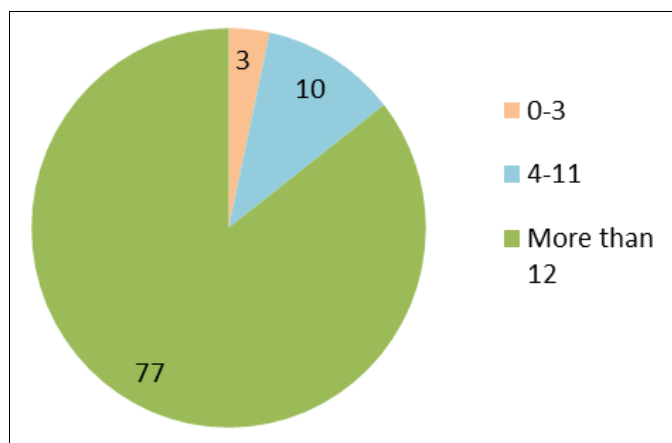


Fig 3

The above table and pie chart shows that out of 90 subjects, 3% (3 subjects) were in acute phase, 11% (10 subjects) were in sub acute phase and 86% (77 subjects) were in chronic phase of stroke. Mean duration of 38.6±25.08 months.

Table 4: HUNT3 Survey Questionnaire distribution of subjects studied

HUNT3 Question Scoring	No. of subjects	Percentage	Mean	Standard Deviation
1- 4	31	34%	5	±1.19
5- 7	59	66%		
Total	90	100%		

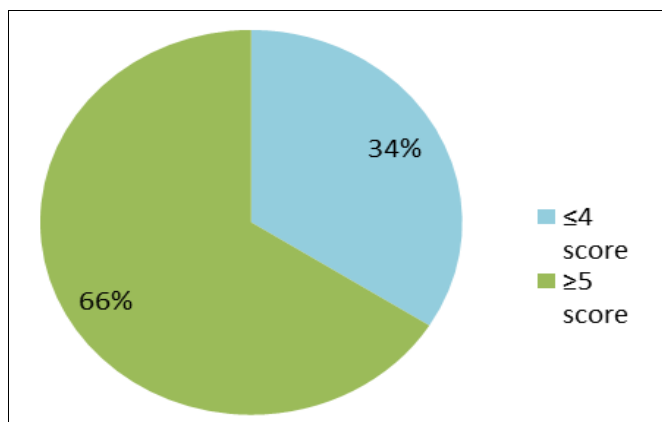


Fig 4

The above table and pie chart shows that out of 90 subjects, 66% (59 subjects) had complaint of Fatigue and remaining 34% (31 subject) had no Fatigue. Mean value 5±1.19

Table 5: Fatigue Severity Scale Scoring distribution of subjects studied

FSS Score	No. of subjects	Percentage	Mean	Standard Deviation
9- 44	29	32%	51.74	±8.36
45- 63	61	68%		
Total	90	100%		

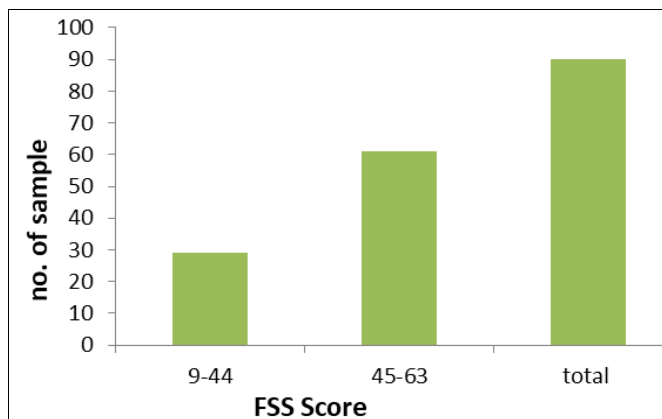


Fig 5

The above table and bar graph shows that out of 90 subjects, 32% (29 subjects) had a less severity of Fatigue and remaining 68% (61 subjects) had more severity scoring more than 44 in FSS. In current study a cut-off score of 44 was used to determine whether patients had significant fatigue severity or not. The average (mean) is 51.74±8.366.

Discussion

Fatigue is a common in a sample of stroke survivors which is often neglected but important stroke sequelae with far reaching consequences. Fatigue following stroke is a multidimensional symptom and may have several causative factors. The study examined the prevalence of fatigue and its Severity who had survived stroke in Bangalore.

Fatigue is a major problem for the person with hemiplegia. This fatigability, which interferes with everyday life processes and active rehabilitation, is attributed to respiratory insufficiency resulting from paralysis of one side of thorax. Haas and colleagues studied respiratory function in hemiplegia and found decrease lung volume and mechanical performance of the thorax to be significant factors, in addition to abnormal pulmonary diffusing capacity which are responsible for early fatigue in persons with hemiplegia.

In a current study we found Fatigue was a common problem in a sample of stroke patients with a prevalence of 66% (59 subjects) reporting fatigue scoring ≥ 5 while 34% (31 subjects) did not report fatigue scoring below 4 in HUNT3 Survey Questionnaire. Talking about fatigue severity we found 68% (61 subjects) in Fatigue Severity Scale with a cut off score of 44.

The prevalence found was higher than previous study where prevalence was most often reported in the range of 35- 50%. There are several possible reasons for this differences. Most obviously, use of different questionnaires and different cut off value to define fatigue will affect prevalence finding. However further possible explanation may be the older patient population in current study where age range of 60- 69 years was more compared to other study.

PSF may be due to its multidimensional structure, comprising physical, emotional and cognitive components, a structure that is observable in the Fatigue Severity Scale used in current study. PSF exerts a negative impact on a patient's daily activities such as decrease participation in physical activities and rehabilitation. Consequently, patients with PSF are reported to have poor neurological recovery and increase mortality. Patients with PSF have difficulty in resuming social, familial, and professional activities and have low quality of life scores.

Conclusion

The study was intended to find the prevalence of Post Stroke Fatigue and to find the severity of fatigue in stroke. Out of 90 subjects, 66% reporting fatigue while 34% did not report fatigue in HUNT3 Survey Questionnaire. Talking about fatigue severity current study found 68% of fatigue severity in Fatigue Severity Scale which overall indicate that Post-stroke fatigue was a common complaint in a stroke survivors.

Therefore it can be concluded that a majority of stroke survivors could develop a fatigue as a one of the main problem which affect their activities of daily living. So, there is a need to raise awareness of this symptom amongst professional and patient populations, and to evaluate management of the symptom independently.

Conflicts of interest

The authors declare no potential conflicts of interest regarding the research, authorship and the publication of this articles.

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References

1. Lerdal A, Bakken LN, Kouwenhoven SE, Pedersen G, Kirkevold M, *et al.* Post Stroke Fatigue-a review. *J Pain Symptom Manage.* 2009; 38(6):928-949.
2. Mukherjee D, Patil CG. Epidemiology and the global burden of stroke. *World Neurosurg.* 2011; 76(6):S85-S90.
3. Langhorne P, Stott DJ, Robertson L, MacDonald Jones L, Mc Alpine C. Medical Complications after Stroke. *Stroke.* 2000; 31:1223-1229.
4. Ingles JL, Eskes GA, Phillips SI. Fatigue after stroke. *Archphys med Rehabil.*1999; 80(2):173-178
5. Annoni JM, Staub F, Bogousslavsky J, Brioschi A. Frequency, characterisation and therapies of fatigue after stroke. *Neurol Sci.* 2008; 29(2):S244-S246.
6. Choi-Kwon S, Kim JS. Post-stroke fatigue: an emerging, critical issue in stroke medicine *Int. J Stroke.* 2011; 6(4):328-336.
7. Choi-Kwon S, Han SW, Kwon SU, Kim JS. Post-stroke fatigue: characteristics and related factors. *Cerebrovasc Dis.* 2005; 19:84-90.
8. Christensen D, Johnsen SP, Watt T, Harder I, Kirkevold M, *et al.* Dimensions of post-stroke fatigue: a two-year follow-up study. *Cerebrovasc Dis.* 2008; 26:134-141.
9. Staub F, Bogousslavsky J. Fatigue after stroke; a major but neglected issue. *Cerebrovasc Dis* 2001; 12(2):75-81.
10. Staub F, Bogousslavsky J Post-stroke depression or fatigue. *Eur Neurol.* 2001; 45(1):3-5.
11. Egerton T, Hokstad A, Askim T, Bernhardt J, Indredavik B. Prevalence of fatigue in patients 3 months after stroke and association with early motor activity: a prospective study comparing stroke patients with a matched general population cohort. *British medical college neurology,* 2015.
12. Carin-Levy GC, Young A, Lewis S, Hannan J, Mead G. Longitudinal changes in muscle strength and mass after acute stroke. *Cerebrovasc Dis.* 2006; 21:201-207.
13. De Groot MH, Phillips SJ, Eskes GA. Fatigue associated with stroke and other neurologic conditions: implications for stroke rehabilitation. *Arch Phys. Med Rehabil.* 2003; 84:1714-1720.
14. Crosby GA, Munshi S, Karat A, *et al.* Fatigue after stroke: frequency and effect on daily life. 2012; 34:633-637.
15. Colle F, Bonan I, Gellez Leman MC, Bradai N, Yelnik A. Fatigue after stroke. *Ann Readapt Med Phys.* 2006; 49(6):272-276, 361-274.