Identification of Physical Problems of Patients with Acute Stroke

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Abstract

Background: Stroke patients experience a variety of physical problems which affect their activities of daily life. As there is need for identifying the physical problems of patients with acute stroke in the initial stage, the present study was undertaken to identify the physical problems of patients with acute stroke. **Objectives:** the objectives of the study were to identify the physical problems of patients with acute stroke. **Methods:** This descriptive study was conducted at neurology department of a tertiary care hospital in Kerala. 60 patients with acute stroke was selected by consecutive sampling technique. Physical problems of stroke patients were identified by standardised tools; National Institute of Health Stroke Scale (NIHSS) and Barthel index. Appropriate descriptive and inferential statistical methods were used to analyze the data. **Results:** The major physical problems identified were immobility (81.7%), lower extremity weakness (75%), upper extremity weakness (71.6%), loss of bladder control (66.7%), loss of bowel control (65%), feeding problem (63.3%) and communication problems like dysarthria (55%) and aphasia (53.3%). **Conclusion:** The study stresses the importance of identification of various existing and emerging physical problems encountered by acute stroke patients and the preparation of a nursing care protocol, which can be utilized in future, for managing the major physical problems.

Key words: *Acute stroke; NIHSS; Barthel index; Physical problems; Nursing care protocol.*

Introduction

Cerebrovascular disorders are an umbrella term that refers to any functional abnormality of the central nervous system that occurs when the normal blood supply to the brain is disrupted. Stroke is the primary cerebrovascular disorder affecting worldwide. Stroke is the second leading cause of death, accounting for 11.13 % of total deaths, and the main cause of disability worldwide. The major type of stroke is ischemic, which occurs in about 87% of all stroke cases.[1]A higher proportion of younger individuals suffer from stroke among developing countries as compared with developed countries.[2]Data from India on stroke among the young are mostly limited to ischemic stroke.[3] A retrospective record based study among stroke patients in the age group of 15- 45 years, conducted at Mangalore shows that among 109 stroke cases, 56% were ischemic stroke, 22.9% were haemorrhagic and 21.1% were embolic stroke.[4]

Stroke can result in a large variety of symptoms and signs but the most common and widely recognized impairment caused by stroke is motor impairment, which typically affects the control of movement of the face, arm and leg of one side of the body and affects

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approximately 80% of patients to varying degrees. The presence of sensory impairments, as well as visual and perceptual disorders (including agnosia, apraxia and neglect) may also affect participation in rehabilitation. These deficits commonly affect mobility, reading and driving abilities, which may result in poor quality of life, low mood and social isolation.[5]Depending on the affected area of the brain, an individual who experiences a stroke may suddenly be left with paralysis or weakness in the upper and/or lower extremities, incontinence, visual impairment, loss of sensation in or awareness of one side of the body, difficulty in swallowing and difficulty in understanding what is said and in communicating with others. [6]

Recent evidence suggests that 72.7% of stroke survivors in rural India have severe disability and unmet needs for stroke care.[7]Permanent disability occurs in 15-30% of the stroke survivors and physical disabilities have significant impact on patients, families and informal care givers. Early recognition and diagnosis of stroke using validated tools can help save life and limit disability.[8] Organized provision of care in a stroke unit have been found to increase the number of patients who survive, return home, and regain functional independence in their everyday activities.[7]However, implementation of such organized care for stroke is limited and inadequate in low and middle income countries, especially in a country like India where resources for rehabilitation are scarce.[9]

Physical problems and complications due to stroke is a global challenge in the nursing care of patients with stroke. Identifying the physical problems and timely intervention is of robust need in caring the patients with stroke. The objective of the study was to identify the physical problems of patients with acute stroke.

Materials and Methods

This descriptive study adopted quantitative approach for identifying the physical problems of patients with acute stroke. The study was conducted in the neurology department of a tertiary care hospital in Kerala. Sample consists of patients between the age group of 30 - 80 years with acute stroke, within 48 hours of onset admitted in neurology department during the period of study.

Using the formula for simple proportion the sample size calculated was 60 and they were recruited consecutively based on the inclusion criteria. Critically ill patients with cognitive impairment and patients with previous history of stroke were excluded.

Data collection instruments

- **Socio-demographic and clinical data questionnaire**

A structured questionnaire was used to collect the socio-demographic and clinical data from the participants. Questionnaire consists of 2 parts, Part A deals with socio-demographic information of participants; age, gender, religion, marital status, place of residence, educational status, type of family, occupation, monthly income, and dietary habits. Part B concerned with clinical data consists of 7 questions and information include date of admission, CT/MRI diagnosis of stroke, type of stroke attack, comorbidities, family history of stroke, adverse health habits, previous experience of any mild symptoms of stroke and Current GCS score. Clinical data was collected from hospital records and information from patients and informant (for patients having problems in communication).

- **National Institute of Health Stroke Scale (NIHSS)**

NIHSS is a tool used by healthcare providers to objectively quantify the impairment caused by a

stroke. The scale composed of 11 items which include level of consciousness, gaze, visual fields, facial weakness, motor performance of the extremities, sensory deficit, coordination (ataxia), language (aphasia), speech (dysarthria), and hemi-inattention (neglect). Each item scores between 0 and 4. For all parameters, a value of 0 is normal; so, the higher the score, the worse the neurological deficit (the highest possible score is 42).[10] Based on the score in the NIHSS, the severity of physical problem is graded as No physical symptoms (0), Minor physical problem (1- 4), Moderate physical problem (5-15), Moderate to severe physical problem (16-20), Severe physical problem (21-42).

- **Barthel Index (BI):** The BI is a widely used scale to measure functional disability among patients with stroke and other neuromuscular or musculoskeletal disorders. It measures the extent to which a person can function independently and has mobility in their activities of daily living (ADL) i.e. feeding, bathing, grooming, dressing, bowel control, bladder control, toileting, chair transfer, ambulation and stair climbing. A client scoring 0 points would be dependent in all assessed activities of daily living, whereas a score of 100 would reflect independence in these activities. [11]

In the present study, selected problems like immobility, problems with bowel and bladder control and feeding problems were included. As per Barthel Index score, the physical problems based on functional dependency level is categorised as no physical problems (80-100), minor physical problems (60-79), moderate physical problems (40-59), moderate to severe physical problems (20-39), severe physical problems (0-19).

MAJOR FINDINGS

Table 1: Findings related to sociodemographic characteristics of participants

n = (60)

Variables	Groups	Frequency (%)
Age in years	≤ 50	12 (20)
	> 50	48 (80)
Gender	Male	40 (66.7)
	Female	20 (33.3)
Religion	Hindu	36 (60)
	Muslim	13 (21.7)
	Christian	11 (18.3)
Residence	Rural Urban	39 (65) 21 (35)
Marital status	Married Unmarried Widow/widower	55 (91.7) 3(5) 2 (3.3)

Cont... **Table 1: Findings related to sociodemographic characteristics of participants**

Education	No formal education Up to Secondary Graduate Professional	2 (3.3) 49 (81.7) 3 (5) 6 (10)
Occupation	Housewife Manual labour Office work Business Professional Unemployed	16 (26.7) 16 (26.7) 5 (8.3) 7 (11.7) 14 (23.3) 2 (3.3)
Type of family	Nuclear Joint/Extended	29 (48.3) 51.7 (31)
Informant	Patient Relatives	36 (60) 24 (40)
Diet	Vegetarian Non vegetarian	2 (3.3) 58 (96.7)

Table 2: The clinical data of the participants (n = 60)

Variables	Group	Frequency (%)
Adverse Health Habits	Smoking Tobacco Alcoholism Smoking & Alcoholism Tobacco use & Alcoholism None	9 (15) 1 (1.7) 10 (16.7) 8 (13.3) 1 (1.7) 31 (51.7)
Comorbidity	Diabetes Hypertension Diabetes and hypertension Diabetes, hypertension and dyslipidemia CAD Other comorbidities No comorbidities	5 (8.3) 11 (18.3) 13 (21.6) 9 (15) 4 (6.7) 10 (16.6) 8 (13.3)
Family history of stroke	Yes No	8 (13.3) 52 (86.7)
GCS	< 8-9 10-12 13-15	1 (1.7) 9 (15) 50 (83.3)
Type of stroke	Ischemia Haemorrhagic	44 (73.3) 16 (26.7)

Table 3: Physical problems based on severity as per NIHSS Score(n=60)

Physical problems	f	%
Dysarthria	33	55
Aphasia	32	53.3
Facial paralysis	25	41.6
Weakness of lower extremity– Left	23	38.3
Weakness of upper extremity– Left	22	36.7
Weakness of lower extremity– Right	22	36.7
Weakness of upper extremity– Right	21	35
Limb ataxia	21	35
Unilateral/ bilateral neglect	19	31.3
Gaze paralysis	16	26.7
Hemianopia	14	23.4
Sensory loss	7	11.7

Table 4: Distribution of participants based on categorization of selected physical problems on dependency level as per Barthel Index (n =60)

Physical problems related to dependency level	f	%
Mobility on level surfaces	49	81.7
Bladder Control	40	66.7
Bowel Control	39	65
Feeding	38	63.3

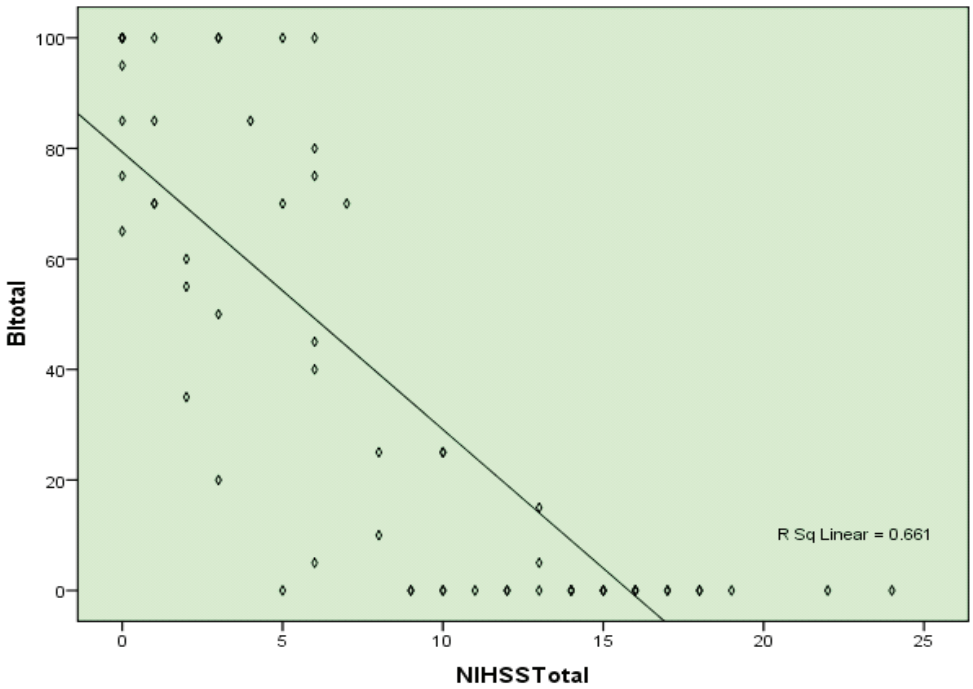
Major physical problems identified based on NIHSS Score and Barthel Index

Table 5: Distribution of participants based on major physical problems (n =60)

Sl No	Physical problems	f	%
1	Immobility	49	81.7
2	Lower extremity weakness	45	75
4	Upper extremity weakness	43	71.6
5	Loss of bladder control	40	66.7
6	Loss of bowel control	39	65
7	Problems with Feeding	38	63.3
8	Dysarthria	33	55
9	Aphasia	32	53.3

Relationship between severity of physical problem based on NIHSS and physical problems related to dependency level based on Barthel Index

- There was a statistically significant negative correlation between severity of physical problem based on NIHSS score and physical problems related to dependency level based on Barthel Index score ($r = - 0.846$, $p < 0.001$).



Spearman's rho, $r = - 0.846$ $p < 0.001$

Figure 1: Correlation between NIHSS score and Barthel Index Score

As shown in above figure, there was a statistically significant negative correlation between severity of physical problem based on NIHSS score and physical problems related to dependency level based on Barthel Index score.

Discussion

In the present study 80 % of participants were above 50 years and 20% were below 50 years, 66.7% were males. Considering the clinical variables in the present study, 51.7% participants had no adverse habits. Major comorbidities found were hypertension (18.3%), diabetes (8.3%) and 21.6% were having diabetes and hypertension together. 13.3% had family history of stroke, GCS of 83.3% participants were between 13-15 and 1.7% were having poor GCS. It was found that 73.3% of the participants were having ischemic stroke whereas 26.7% with haemorrhagic stroke.

The observation was found to be in line with several studies where the major comorbidity among stroke patients were hypertension (73.18%) in rural areas and diabetes in urban area.[12] Stroke was higher among participants having a family history of stroke. Majority of participants (56.9%) had good GCS between13-15. Several studies shows that ischemic stroke was found to be more than the haemorrhagic stroke.[4,13,14,15,16,17]

In the present study, major physical problems identified among patients with acute stroke were immobility, (81.7%), lower extremity weakness (75%) and upper extremity weakness (71.6%). A cross sectional study shows that 50% of stroke patients had physical impairments and needed varying degrees of care for their activities of daily living.[18]A study conducted by Horner point out that functional impairments were greater in stroke patients in black race.[19] This finding was also confirmed in a study, where most of the patients had hemiplegia in arm (weakness 43%, or no movement 54%) and in leg (weakness 73%, no movement 23%).[5]

Other major problems identified in the present study were loss of bladder control (66.7%) and loss of bowel control, (65%). Major communication problems noticed in the current study were dysarthria (55%) and aphasia (53.3%). Flowers et al observed the incidence, co-occurrence, and predictors of dysphagia, dysarthria, and aphasia after first-ever acute ischemic stroke patients and the results revealed the incidence of dysphagia as 44%, dysarthria 42%, and aphasia 30%.[20]Another study findings shows that more than 50% of patients were suffering from speech problems (dysarthria 21%, dysphasia 31%).[21]

Visual problems identified in the present study include gaze paralysis (26.7%) and hemianopia (23.4%). Findings in a study to identify homonymous visual field defects among stroke patients highlighted that for persons experiencing first ever stroke, 8.3% had homonymous visual field defects and those with a history of stroke in the past shows the defect as 52%.[21] Lincoln et al has supported this finding where the incidence of hemianopia was 19%.[22]

The findings concluded that the majority of participants had motor impairment including immobility and weakness of extremities, problems in communication, elimination problems (bowel and bladder) and feeding problem. The study stresses the importance of managing various existing and emerging physical problems encountered by stroke patients.

Conclusion

The findings concluded that the majority of participants had motor impairment including immobility and weakness of extremities, problems in communication, elimination problems (bowel and bladder) and feeding problem. The associated factors that influence the severity of physical problems were also elicited as a part of the study. The study stresses the importance of managing various existing and emerging physical problems encountered by stroke patients and help them to regain their health as before thereby achieving a better quality of life.

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