RESEARCH ARTICLE

Impact of stroke on quality of life and functional independence

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ABSTRACT

Background: Cerebrovascular accident is the prime cause for the functional disability and deteriorated quality of life (QOL) which affects person's social and physical capabilities. Present stroke outcomes are restricted to evaluate global influence of event on patient's well-being. Hence, it is mandatory to know the effect of stroke on functional independence and domain (DOM)-specific QOL in stroke survivors. **Aims and Objectives:** The objectives of this study are to assess DOM-specific QOL and functional independence in stroke survivors. **Materials and Methods:** A cross-sectional survey was conducted on 30 stroke survivors after approval from the Institutional Ethics Committee and their written voluntary consent. QOL was measured with the use of the World Health Organization Quality of Life Instruments (WHOQOL-BREF) questionnaire, and functional independence was measured with the use of Functional Independence Measurement (FIM) scale. **Results:** Thirty patients (63.33% were men and 36.66% were women) were participated with the mean age of 61.47 ± 10.17 years for men and 64 ± 12.14 years for women. The QOL in DOM 1 (physical) was 10.6 ± 3.42, and in DOM 2 (psychological), it was 12.8 ± 6.09. DOM 3 (social relationship) was 14.06 ± 1.52 and DOM 4 (environmental) was 20.23 ± 5.71, i.e., DOM 1 and 2 were more affected. Further, motor component in functional independence was 41.83 ± 20.11, and in cognitive component, it was 34.76 ± 0.43, i.e., motor component was more affected than cognitive component in our patients. **Conclusion:** The stroke survivors had lower QOL and functionally dependent in the activity of daily living. Physical and psychological dimensions of QOL and motor component of FIM were more affected.

KEY WORDS: Functional Independence Scale; Quality of Life; Stroke; World Health Organization Quality of Life BREF

INTRODUCTION

According to the World Health Organization (WHO), stroke is quickly emerging clinical signs of global or focal or disturbance of cerebral function, remaining more than 24 h or leading to death, with no obvious cause other than that of vascular origin.[1] It is one of the foremost causes of death and disability in India. The predicted prevalence rate of stroke is 84–262/100,000 in rural and 334–424/100,000 in urban areas,[2] and the WHO predicts that disability due to stroke will rise to 51 million in 2020.[3] Further, it is a prime reason for functional impairments, with 20% of survivors which need institutional care after 3 months and 15–30% being everlastingly disabled.[4] Stroke not only affects physical disability but also further has a huge influence on their social and physical consequences which is similarly devasting to them.[5] The long-term penalties of stroke have been documented in recent years which could be depression, functional dependency, and detachment from society. In India, the incidence and 30 days' case fatality rates of stroke are greater than those in the developed countries.[6,7] However, to the best of our knowledge, there are very few studies on common causes of disability and handicap in communities.[8] According to the WHO, quality

of life (QOL) is demarcated as "an individual's perception of their position in life in the cultural context and in the value systems in which they live and in relation to their objectives, hopes, concerns, and needs".[9] The WHOQOL-BREF is a 26-item, self-administered questionnaire in which things are scored on a 5-point scale.[9,10] It has four domains (DOMs), i.e., physical, psychological, social relationships, and environment. Functional Independence Measurement (FIM) scale is used to depict individual's functional independence. It has the benefit of providing a thorough assessment of numerous functional abilities of the patient, and in addition, it includes measures of communication and cognition, important components of post-stroke functioning.[11,12] FIM has two dimensions: Motor and cognitive. The motor dimension designates physical functioning, and the cognitive dimension defines communication, social interaction, and cognitive functioning.[13] Functional independence and QOL become an utmost important measure not only to know disability level or psychological status but also as an integral component for improving the overall status of the patient in rehabilitation phase. Current stroke outcome assessment is often limited to resulting neurological impairments neglecting to evaluate the total influence of event on patients' well-being. The purpose of this study was to examine DOM-specific QOL and functional independence in individuals with stroke.

MATERIALS AND METHODS

Study Design

This was a cross-sectional survey.

Study Population

Indian populations who are suffering from the stroke and who fulfilled the inclusion and exclusion criteria were included.

Sample Size

A total of 30 patients who were suffering from the cerebrovascular accident (CVA) were participated.

Source of Sample

The samples were recruited from the Outpatient Department of the Shree Krishna Hospital (SKH), Karamsad, and its adopted centers.

Criteria of Selection

Inclusion criteria

Stroke patients of any age and gender who were in subacute or chronic phase diagnosed by physician were included in the study.

Exclusion criteria

Stroke patients who had other central nervous system disorders (e.g., Parkinson's disease and multiple sclerosis) or other musculoskeletal or any psychological disorders were not taken in the study. Further, if they had a previous episode of stroke or history of acute stroke, they were excluded from the study.

Methodology of the Study

The research project was conducted after getting approval from the Institutional Ethics Committee. A cross-sectional survey was conducted on 30 stroke survivors after their written voluntary consent. All the patients who were diagnosed as having stroke and who fulfilled the inclusion and exclusion criteria were recruited from the SKH and its adopted centers. QOL was measured with the use of the WHOQOL-BREF questionnaire,[9,10] and functional independence was measured with the use of the FIM scale.[13]

The WHOQOL-BREF is a 26-item, self-administered questionnaire in which DOMs are scored on a 5-point scale.[9,10] It has four DOMs, i.e., physical, psychological, social relationships, and environment.

The FIM assesses the grade of support essential by the patient to execute motor and cognitive tasks of daily life. It labels a set of 18 tasks that deliver a record of performance attained and divided into the subsequent components: Self-care (getting ready, bathing eating, getting dressed, and using the toilet), locomotion, sphincter control, transfers, communication (comprehension and expression), and social integration (social interaction, problem solving, and memory). Each task obtains a score from 1 (total dependence) to 7 (total independence), and final score can range from 18 to 126 points. Greater marks suggest higher independent status.[13]

RESULTS

In our study, we recruited 30 stroke patients and collected data about their QOL and functional independence. Of which, 19 (63.33%) were males and 11 (36.66%) were females. In that, mean age was 61.47 ± 10.17 years for males and 64 ± 12.14 years for females [Table 1].

The QOL of 30 stroke patients in DOM 1 (physical) was 10.6 ± 3.42, DOM 2 (psychological) was 12.8 ± 6.09, DOM 3 (social relationships) was 14.06 ± 1.52, and DOM 4 (environmental) was 20.23 ± 5.71, which suggest that DOM 1 and DOM 2 are more affected compared to DOM 3 and DOM 4 [Table 1]. The functional independence of 30 patients with stroke in motor component was 41.83 ± 20.11 of 91, and in cognitive component, it was 34.76 ± 0.43 of 35 which suggests that motor component is more affected

in stroke patient compared to cognitive component [Table 1]. The functional independence of the male patients was 117.13 ± 38.37, and for female patients, it was 111.27 ± 46.36 which suggests that female patients are more affected compared to the male patients [Table 2].

In our study, we have 16 (53.33%) patients with chronic stroke and 14 (46.66%) patients with subacute stroke. In chronic stroke patients, QOL was 109.75 ± 43.66, and for subacute patients, it was 103.10 ± 49.07 which suggest that subacute stroke patients are more affected [Table 2]. The functional independence for chronic stroke patients was 119.21 ± 35.83, and for subacute stroke patients, it was 108.17 ± 44.85 which suggest that subacute stroke patients are more affected [Table 2]. In our study, we had 15 (50%) patients with right CVA and 15 (50%) with left CVA. In right CVA patients, QOL was 108.53 ± 48.87, and for left CVA patients, it was 108.73 ± 47.85 which reveals that there was no significant statistical difference [Table 2], whereas functional independence of the right CVA patients was 117.76 ± 40.74, and for left CVA patients, it was 114.33 ± 44.24 which suggests that patients with left CVA were more affected [Table 2].

Table 1: Basic characteristic of patients and overall FIM and WHOQOL-BREF

Parameters	Age/mean	SD
Male	61.47 years	10.17
Female	64 years	12.14
WHOQOL-BREF		
DOM 1	10.6	3.42
DOM 2	12.8	6.09
DOM 3	14.06	1.52
DOM 4	20.23	5.71
Total	61.76	11.57
FIM		
Motor	41.83	20.11
Cognitive	34.76	0.43
Total		

FIM: Functional independence measurement,
WHOQOL-BREF: World Health Organization quality of life,
DOM: Domain

Table 2: Gender-wise FIM and WHOQOL-BREF

Parameters	Mean	
	FIM	QOL
Male	117.13±38.37	107.71±46.44
Female	111.27±46.36	107.31±48.75
Subacute	108.17±44.85	103.1±49.07
Chronic	119.21±35.83	109.75±43.66
Left	114.33±44.24	108.73±47.85
Right	117.76±40.74	108.53±48.87

FIM: Functional independence measurement,
WHOQOL-BREF: World Health Organization quality of life

DISCUSSION

The current study aims to find the impact of stroke on DOM-specific QOL and functional independence. In our study, we observed that stroke survivors had lower QOL and functional independence. Physical and psychological dimensions of QOL were more affected than DOM such as social relationship and environment DOM. Moreover, motor component of FIM was more affected.

Serda *et al.* and Kauhanen *et al.* also stated that stroke hampers QOL, especially physical and psychological aspects.[14,15] Similarly, our study patient's social relationship along with environmental DOM was less affected than compared to physical and psychological. This may be due to the fact that we were witness that majority of our patients living with their family and family members, relatives, and their friends were taking supreme care for their early recovery and to regain activity of daily living. Nevertheless, hence, emotional changes during stroke were best controlled and managed by continuous family support. Others had stated that family is unique and effective way to manage stress in contrast to western culture.[16,17]

Chumney *et al.* and Rayegani *et al.* stated that FIM is a precise forecaster of major outcome in post-stroke survivors.[3,18] In our study, we found that there was marked affection in functional independence in stroke patients, and motor component of FIM was more deteriorated than cognitive DOM. Similarly, Heruti *et al.* and Kong and Yang displayed more differences in patient's motor and cognitive FIM score.[19,20] Further, we found gender difference in QOL and functional independence affection. We found that female patients had worse QOL than male stroke survivors. Zalihić *et al.* and Paolucci *et al.* similarly noted that QOL was better in male stroke patients than female stroke survivors.[21,22] Like us, they also found a statistically significant difference in physical and psychological DOM of QOL. The probable hypothesis may be that they were more apprehensive than male after cerebral stroke. The reason for such gender-related alterations in QOL may be due to mark dissimilarities in good musculoskeletal systems in male at any ages. Fróes *et al.* further added that female had low self-esteem and less self-confidence with marked insecurity.[23]

Our study reveals that there is no significant effect of dominant and non-dominant cerebral stroke on QOL of stroke survivors. However, further, we found that stroke survivors with dominant hemisphere lesion were more functionally dependent than the non-dominant hemisphere stroke, but it was statistically not significant. Yavuzer *et al.* showed that left CVA patients showed less capacity to manage the activity of daily living than right CVA patients.[24] Other had found no such difference.[25]

Moreover, we found that the patient with subacute stroke had worse QOL and functional independence compared to the patients with the chronic stroke. As per our observation during our study, the reason for this might be due to various

adaptations and modifications in lifestyle implemented by the chronic patients.

Limitation for the present study was that stroke patients were not differentiated based on the type of stroke, phase of recovery, and type of lesion. Hence, future study can be performed by overcoming this limitation in large population and even in other ethnic group.

CONCLUSION

We conclude that stroke survivors had lower QOL and functional independence. Physical and psychological dimensions of QOL and motor component of FIM were more affected. More deterioration in QOL and functional independence are seen in female patients. The stroke survivors with dominant hand affection are more functionally dependent, and the subacute stroke patients have more deterioration in QOL and functional independence.

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