



Quality of Life in Stroke Survivors in Central Kerala

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Abstract

Background: *Advances in acute care and rehabilitation in stroke has improved the functional outcome significantly. But the survivors have to cope up with alteration in their quality of life. An assessment of quality of life in stroke survivors validates successful rehabilitation.*

Aim: *To evaluate different domains of quality of life in post stroke patients attending rehabilitation unit of a tertiary care centre in Central Kerala.*

Materials and Methods: *The cross sectional study was conducted in the outpatient clinic of the Department of Physical Medicine & Rehabilitation, Government Medical college Kottayam among the post-stroke patients of 3-6 months duration of illness.*

Data was collected from the selected patients through structured questionnaire. The study tools included the socio-demographic and physical variables and the translated version of SSQOL (Stroke Specific Quality Of Life) questionnaire in local language.

Results: *The quality of life in stroke survivors were reduced in the physical, social, psychosocial and functional domains.*

Conclusion: *The study calls for a structured rehabilitation program to improve the quality of life in stroke survivors.*

Keywords: *Stroke, Quality of Life, Central Kerala.*

Introduction

Stroke, the third leading cause of disability¹, causes a significant impact on the life of the survivor and the care giver. It is a non-traumatic brain injury that often leads to neurological deficits characterised by effects on motor, sensory, cognitive, language and equilibrium functions which subsequently leads to an alteration in the functional status of the survivor.

Many of these stroke survivors report a decline in the health related quality of life².

About 15 million people suffer from stroke worldwide³. About 5 million of them suffer from some forms of permanent disability. Age related prevalence reported with stroke was 250-300/lakh⁴. In India about 165000 incidence of stroke is reported every year⁵. Currently, the Western statistics show a decline in the incidence

of stroke compared with India⁶. In spite of a decline in the global stroke mortality, incidence and disability rates, the burden of stroke continues to rise.

Stroke affects multiple domains of life which includes physical, mental, social and vocational. The tremendous advancements in the acute and the rehabilitation cares in stroke has led to significant improvement in the physical and mental well-being of the survivor. Their functional status and level of dependence for the activities of daily living influence their quality of life. The health care system has shown significant strides in coping with the physical, social and psychological sequel such that the assessment of the quality of life is an evaluator of the effectiveness of rehabilitation in the community⁷. The concept of quality of life encompasses physical, emotional and social well-being. WHO defines quality of life as an individual's perception of their position in life in context of their culture and value systems in which they live and in relation to their standards, goals, expectations and concerns⁸. It also indicates personal satisfaction⁹, influences and experiences¹⁰ in matters regarding health and diseases, physical, mental and social interactions and well being¹¹. This also measures the inter personal relations and health related indices and includes the various domains of physical (disease related), functional (activities of daily living), psychological (cognitive) and social (family and society) interactions¹².

The burden of disease is measured in terms of Quality Adjusted Life Years (QALY) and Disability Adjusted Life Years (DALY)¹³. Several scales are available to assess the quality of life- both general and specific. SF 36, Euro QOL 5 Dimensional Questionnaire etc are some of the general scales. Stroke Specific Quality of Life Scale (SSQOL) and Stroke Impact Scale are stroke specific scales used for this purpose. Most of these are dependent on various factors of demographic pattern and ethnicity. The rehabilitation services available in the community

have a significant role in determining the quality of life. The quality of life is a significant health care outcome relevant to the community and the existing health care system¹⁴. The outcome affects the patient, family and the society significantly.

On review of literature, stroke is attributed to cause significant reduction in the quality of life.¹⁵ The decline in functional status, age, depression, anxiety and fatigue have been associated with reduced quality of life post stroke while higher living standards and better education has positive influence¹⁶. The Chinese, Swedish and French studies¹⁷ have reported marked decline in the quality of life after stroke. Few studies have been conducted in India^{18,19}, which also showed similar results. In Kerala very few such studies have been reported so far.

Post stroke, 37% patients show discrete changes, 16% show moderate changes and 32% show severe changes in the functional capacity²⁰. Self-care, mobility, upper extremity function, work and productivity are the domains where the survivors show significant decline²¹.

Though the several indices validate the physical and functional status attained by the stroke survivor, it barely represents the quality of life in the patient's perspective. SSQOL authenticates the patient's version of the quality of life bordering on different parameters in his perspective²². This assessment is a pointer towards the efficiency of the existing treatment systems and its relevance. Since there is paucity of studies regarding the quality of life among the stroke survivors in Kerala, the present study was carried out.

Materials and Methods

A cross sectional descriptive study was done recruiting subjects from the outpatient clinic, Department of Physical Medicine & Rehabilitation, Government Medical College, Kottayam. The patients who reported to the clinic from October 2018 to March 2019 (6months) were included in the study. Diagnosis of stroke was confirmed by clinical and/or radiological

findings and perusal of the available records. The study was approved by the institutional ethical review board and informed consent was taken from all subjects. Sample size was calculated as 200 and it was calculated by using following formula:

$n = (Z^2 * P (1 - P)) / e^2$ where Z = value from standard normal distribution corresponding to desired confidence level (Z=1.96 for 95% CI), P is expected true proportion kept as 49.6%²⁰ the level of precision at 15%.

Subjects were included if they had stroke, with a duration 3-6 months after the first episode of stroke. Subjects with concomitant neurological diseases, traumatic brain injury and tumor, severe cardiac, hepatic or renal diseases were excluded. Those patients with impaired comprehension and aphasia and with recurrent stroke were also excluded from the study. The subjects were excluded if they were unwilling to cooperate.

The data was collected using the Proforma to include various socio demographic and physical variables and the translated version of SSQOL scale in Malayalam. Demographic data included were age, gender, education, life style, side involved, type of lesion, site of lesion, family support, early rehabilitation, impairment (motor, speech and pain), depression, grip and gait. Data on risk factors were received from the old medical records and personal interview. Absence of risk factor was coded as 0 and presence was coded as 1. The different conditions considered were smoking, alcoholism, hypertension, diabetes mellitus, dyslipidemia and cardiac disease.

SSQOL²² is a self-reported questionnaire specific for stroke, translated and validated in many countries. It has 49 items in 12 domains with three response sets in 5 point Likert format. This covers the domains of energy, family roles, language, mobility, mood, personality, self-care, social roles, thinking, upper extremity function, vision and work and productivity. The different responses are based on the amount of help required (no help to total help), amount of trouble experienced (unable to do to no trouble) and the

degree of agreement with statements regarding functions (strongly agree to strongly disagree).

This covers each of the domains mentioned. The minimum score is 49 and the maximum is 245. The higher the score, better will be the quality of life. A score of less than 60% (147) is defined as low quality of life²⁰. Independent predictors of good overall HRQOL (Health Related Quality of Life) were the SSQOL score Odds Ratio 2.97; 95% CI, 1.3, 7.1; p= 0.01²².

Data analysis: Data analysis was performed by SPSS (version 17) for windows. Demographic and co-morbidities data was summarised as frequency and percentages. Descriptive statistics was performed to find out mean, range, minimum, maximum and standard deviation for the age and outcome variables (SSQOL). Microsoft excel and Word was used to generate graph and tables.

Results

The age of the subjects varied between 34 and 88 years with a mean of 60.03 and standard deviation of 9.89 years. The median and mode were found to be 60 years. The age distribution of the subjects in this study is summarised in the table below.

Table 1: Disribution of Age

Age (Years)	Frequency	Percentage
<35	3	1.5
36-40	5	2.5
41-45	6	3.0
46-50	27	13.5
51-55	25	12.5
56-60	36	18
61-65	37	18.5
66-70	36	18
>70	25	12.5

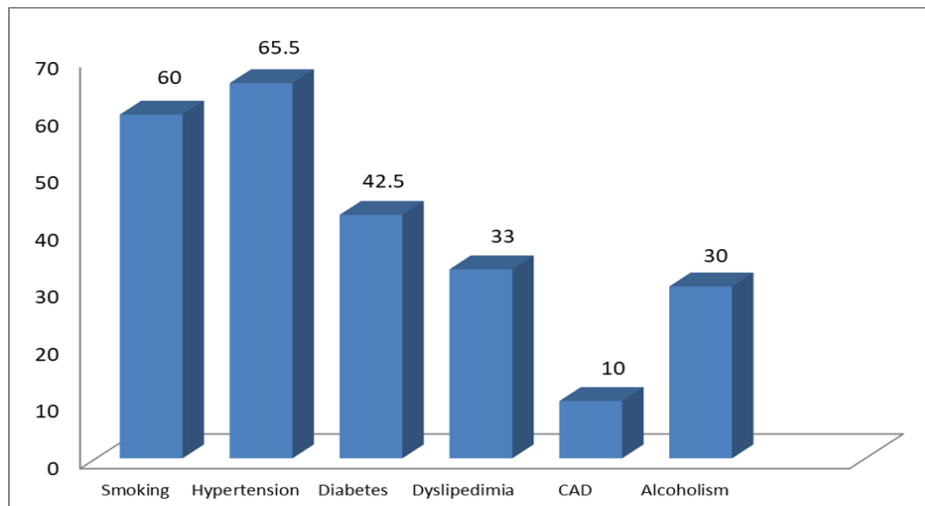
8 subjects were below 40 years (4%) and 98 subjects (49 %) above 60 years. 41 of them (20.5%) were below 50 years and 61 (30.5%) between 50 and 60 years. 25 subjects (12.5%) were above 70 years of age. There were 136 males (68%) and 64 females (32%).

In the present study, 81 (40.5%) subjects had education below higher secondary level while 89 (44.5%) subjects had higher secondary education. 29(14.5%) subjects had higher education. One person did not have any education. 78 (39%) of

our subjects were manual labourers, 19 (9.5%) subjects were doing agriculture, 54 (27%) subjects belonging to home making and 49 (24.5%) subjects were belonging to ‘others’ (drivers, office work etc.). In the present study, 103 (51.5%) had

a sedentary life style and 97 (48.5%) were physically active. In our study group, 112 (56%) had right sided involvement and 88 (44%) left side.

Graph 1: Risk factors in stroke

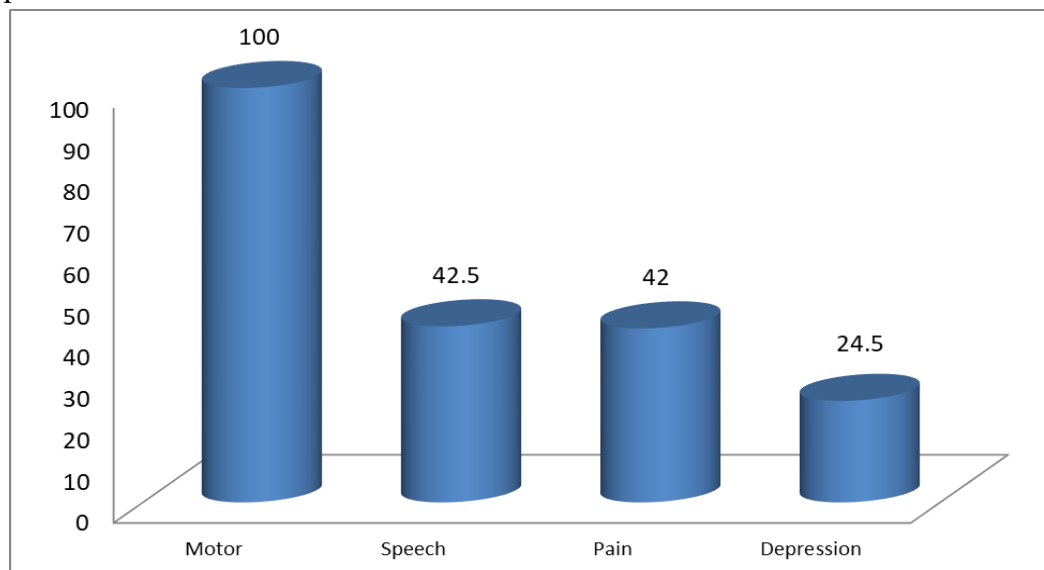


In our study, hypertension was found to be the most common risk factor associated with stroke (65.5%), followed by smoking (60%), diabetes (42.5%), dyslipidaemia (33%) alcoholism (30%) and cardiac diseases (10%).

173 subjects (86.5%) had ischaemic stroke and 27 (13.5%) haemorrhagic stroke. 185 subjects (92.5%) had MCA stroke, 8(4%) ACA and 7 (3.5%) Posterior circulation stroke. Most of our

subjects, 195 (97.5%) had family support. In the present study, 138 (69%) had undergone early rehabilitation in the first week while 62 (31%) did not. All subjects had motor impairment, 85 (42.5%) had speech impairment and 84 (42%) had pain. 49 subjects (24.5%) had treatment for depression. Vision, cognition and sensory are less effected.

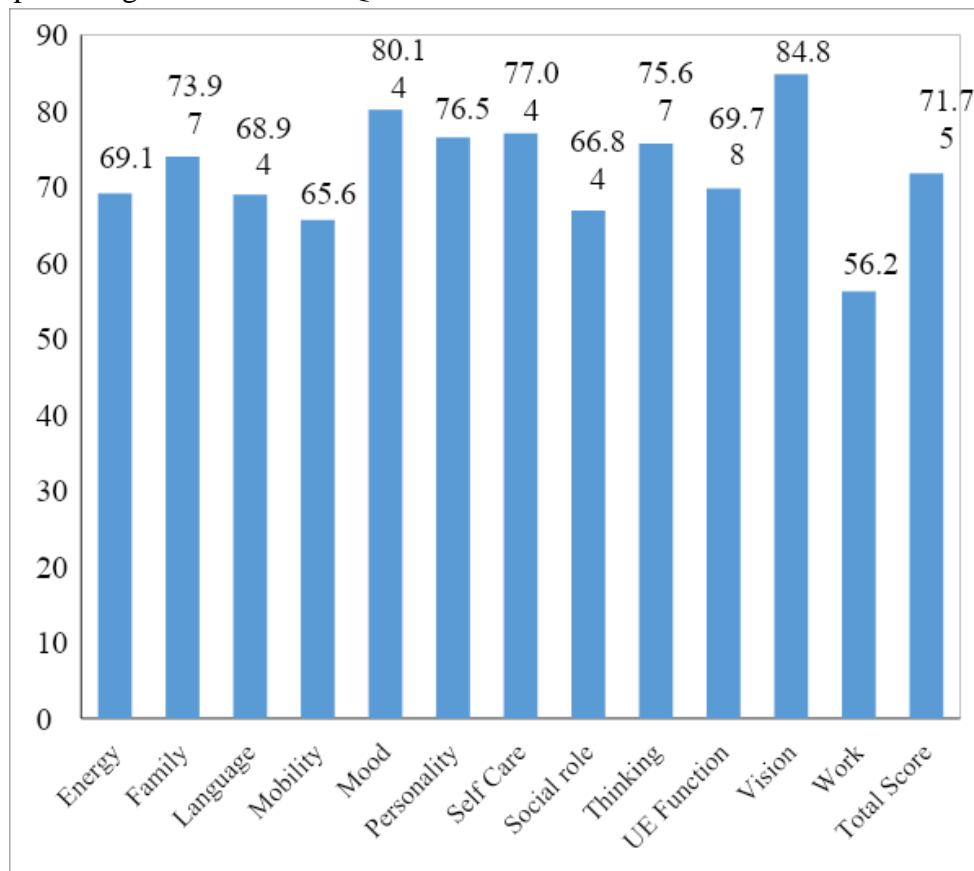
Graph 2: Impairments



In the present study, 25(12.5%) subjects had strong grip, 113(56.5%) subjects had moderate grip and 62 (31%) subjects had weak grip.

178(89%) subjects had independent gait and 22 (11%) subjects had assisted gait.

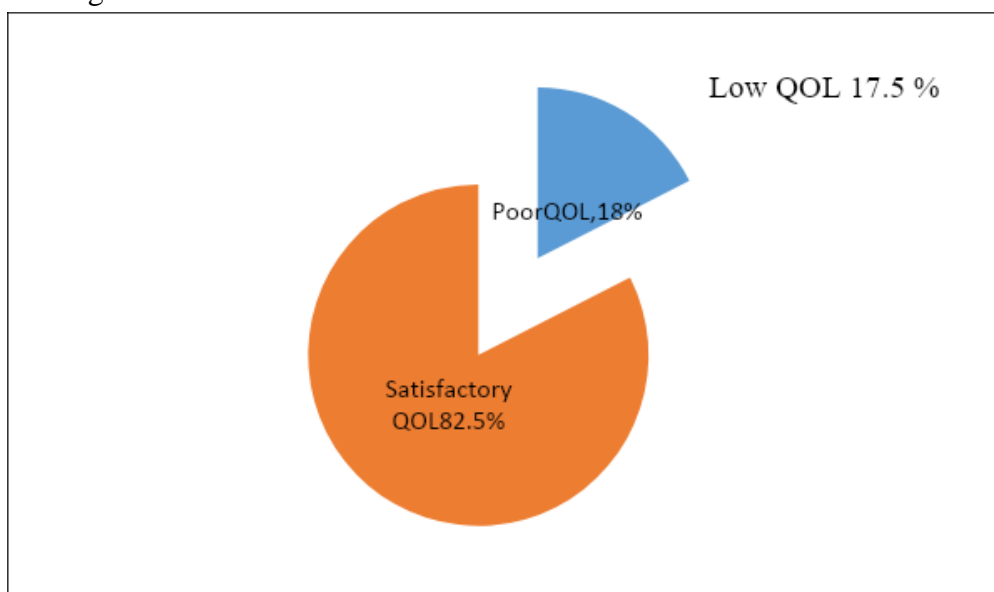
Graph 3: Mean percentage of domains of QOL



The mean total score was 175.88 with standard deviation of 26.10 and range, 100-231. Results

showed that quality of life was low in 35 subjects (17.5%).

Graph 2: QOL among stroke survivors



Discussion

In the present study, the mean age of the patients was 60.03 years. Of these, 68% were males. The age group varied from 34 to 88 years. 4% of the subjects were below 40 years and 49%, above 60 years. Even the median age and mode were the same. This indicated that the present survey sample fit into normal distribution pattern.

In a study by Sylaja. et al²³, the mean age of stroke in Kerala was 58.3 years with 67 % males. 3.8% constitute patients below 40 years. These results were comparable to our study. But 67% of their subjects were 60 years or more. In the study by Sridharan. et al²⁴, 77% subjects were above 60 years while 3.8 % were below 40 years. In these two studies, the sample size was large (n=2066, n=541 respectively) compared to our study (n=200) and this could be the reason for the variation. Chandran P. et al²⁵ (n=47), in their study reported a mean age of 70.58, of which 67.5% were males. Rajan B. et al¹⁸ reported their mean age to be 61.33 years, again comparable to our results. The mean age for stroke onset is 63 years in India, while it is higher in the West, 68 years in the US and 71 years in Italy²⁶. In the study by Wade. et al²⁷ the mean age was 72.4 years of which 2% was below 45 years and 79% above 65 years. This could be explained by ethnicity.

In the present study, only one person was illiterate. Rajan B. et al and Rinu Susan Raju et al reported significant number of illiterates among their subjects^{18 19}. Level of education shows an inverse relationship with stroke incidence²⁸ and higher levels of education is associated with higher quality of life among stroke survivors²⁹. Because of higher literacy in Kerala and better standards of living, the patient and the care givers are amenable to life style modifications, better adherence to treatment and better coping.

Majority of our subjects were manual laborers. 51.5% of our subjects followed a sedentary lifestyle. The occupation of an individual influences the socioeconomic status and physical activity of the individual modifying the risk factors of stroke. The physical activity may reduce

blood pressure, diabetic status and body weight and improve circulation³¹.

In our study, 56% had right sided weakness while 44% had left sided weakness. Wade. et al²⁷ reported 46% of their subjects with right sided weakness and 40% left sided weakness. In the study by Rajan B. et al¹⁸ 56% had right sided weakness, 39% had left sided weakness and 5% bilateral involvement. In our study there were no bilateral cases. The quality of life in right sided hemiplegics was reported to be better except in the domain of communication. Left hemiplegics also reported decline in communication skills and this suggested that this ability depended on other factors like motor and cognitive skills, indicating a weak association between quality of life and laterality of lesion³¹.

In majority of the studies including ours (86.5%), ischemic strokes constituted the vast majority. There has been reports of reduction in haemorrhagic stroke annually by 1.7% and a rise in the ischemic stroke incidence by 8.7%³³. This could be attributed to the advancements in treatment of risk factors, Western style diets and life styles. The territory of involvement in our subjects showed a similar pattern when compared to the studies worldwide^{32, 34}.

The various studies have reported hypertension to be the most frequent comorbidity varying from 45.5 % in Lausanne Stroke Registry³⁴ to 83.2 % in Sridharan et al²⁴. The range for diabetes varied from 12.6% to 50%. In studies elsewhere, cardiac diseases, especially atrial fibrillation is considered to be a high risk for stroke. Dyslipidaemia is reported to have a significant influence on stroke. High cholesterol levels are associated with ischemic strokes while there is an inverse relation with haemorrhagic stroke. These risk factors are quite common probably due to socio- economic reasons, poor awareness and lack of infrastructure. In India, these modifiable risk factors are inadequately controlled and hence account for higher stroke prevalence than the West³⁵.

In our study, 60% of our subjects were smokers and 30% used to consume alcohol. Definite dose-

response relationships and associations have been reported between smoking and ischemic stroke. Cessation of smoking or reduction in smoking reduces the risk³⁶. A J shaped association between alcohol consumption and total and ischemic stroke has been attributed³⁷. Heavy drinking increased stroke risk while a lower dose had no such effects. Family status and support is an integral component of rehabilitation especially in Indian scenario. Most of our subjects were married and well supported by family (97.5%). 2.5% subjects who did not receive any family support were either single or divorced. The interaction of the patient with the family, support by members and care given by them influences the functional status. In India where joint family system was in vogue it had a positive influence in stroke rehabilitation¹⁹.

69% of our patients underwent early rehabilitation while in the acute phase of treatment which influenced recovery. The rest of the patients were not referred for early rehabilitation or did not attend this phase of care for some reason. Early rehabilitation is found to have influence on the outcome of stroke³⁸.

The SSQOL measures the overall quality of life in a post stroke patient as perceived by him. Only a limited number of studies are available with regard to Quality of Life and our study attempted to gauge the performance ability, level of dependency, psychological and social effects, satisfaction and energy of the individual patient as experienced by him or her. In our study, the score was below 60% in 17.5% of our subjects indicating a low quality of life in them at 3-6 months post stroke.

In general we found that the quality of life was satisfactory in 82.5% of the subjects. We explored the QOL of the stroke survivor in terms of behaviour, cognition, functional mobility, language, upper extremity function, personality, social relationships etc. all covered in the 12 domains of the questionnaire. Higher scores indicated better QOL. It was found that the most affected domain was Work and productivity

(56.2). The domain of mobility was the next affected (65.60), followed by Social roles (66.84) and language (68.94). The least effected ones were Vision (84.80), Self-care (77.04) and personality (76.50).

Review of literature reports a reduction in the health related quality of life in stroke survivors². Our mean score was 175.88. 17.5% of our subjects had scores below 147, indicating a low quality of life. A majority of our subjects showed a satisfactory QOL, though the scores were suboptimal. Studies in Pakistan reported mean scores of 164.18 (SD 32.3) while in Brazil it was 139.9 (SD 38.4) and in Nigeria, it was 156.7 (SD 41.6)³⁹. This difference could be due to good social support, better socioeconomic status, improved literacy and higher education in our area.

In the study by Ketaki. et al²¹, the four domains which were most affected were work and productivity, self-care, mobility and upper extremity functions. In a Turkish study²¹, upper extremity function was the most effected while Malawi¹⁶ reported Self-care as the domain maximally affected. In a study in geriatric patients, the most affected domain was work and productivity⁴⁰. In the original study by Williams et al²², mobility (66%), energy (65%), Upper extremity (62%), work and productivity (61%), mood (45%), self-care(41%), social roles(39%), Family roles(38%), vision(38%), thinking (37%) and personality (21%) were involved in that order. All our patients had motor impairment and a major number of patients had speech involvement. Even though treatment was initiated early, they were in the process of recovery and rehabilitation. Hence their level of dependency and performance is low, giving a reduced total score.

Majority of our patients had good family support which might have influenced the QOL in all domains²⁹. The age group affected more in our study was low compared to the West and many studies elsewhere. This difference in age group may be responsible for the variation in the domains affected. The level of education, better

living standards, more awareness and standard rehabilitation practices may also account for this. The availability of early rehabilitation facilities might also have influenced the domains affected, especially in the upper extremity functions which is less effected in our studies compared to others. The subjects were recruited from clinical settings and hence might be under sampled. Since the subjects were selected from a rehabilitation unit it might not reflect the community as a whole. None of the outcome measures describe the dimensions of recovery and disability and predict the actual outcome after the stroke episode. No clear picture of the physical, mental and social status of the person has been provided. Rural –urban variations and socioeconomic consideration were also not taken into account.

There is scope for further studies to facilitate the development of structured rehabilitation strategies. Further studies can be undertaken to assess the difference in QOL between subjects who received early rehabilitation and those who did not. Studies can also be undertaken in other demographic variables such as age and gender to assess the QOL.

Conclusion

The quality of life in stroke survivors in Central Kerala is found to be suboptimal. Work and productivity, mobility, language and social roles are mostly effected. This calls for the development of a structured rehabilitation pathway whereby motor, speech, social and vocation can be addressed in a more productive manner.

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